ORDER NO. SD8001-1661

# Service Manual

FM/AM Stereo Receiver

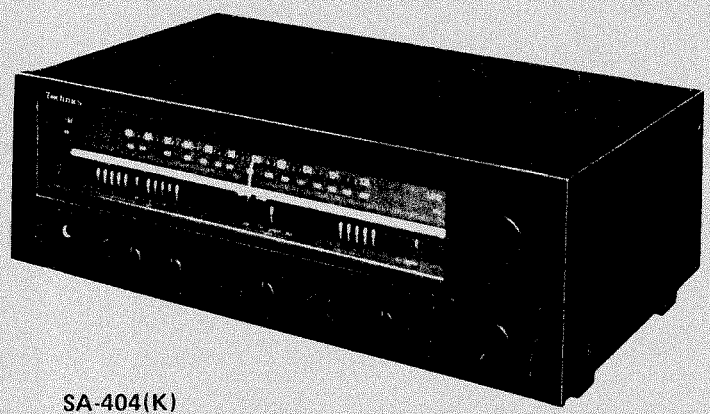
## SA-404

[E], [EG], [XGF], [XGH],
[EB], [XE], [XA], [XAL]

## SA-404(K)

[E], [XGH]

SA-404



SA-404(K)

*** The colors of this model include silver and black. The black type model is provided with (K) in the Service Manual.**

**Areas**

- [E] and [EG] are available in Scandinavia and European.
- [XGF] is available in France.
- [XGH] is available in Holland.
- [EB] is available in Belgium.
- [XE] is available in United Kingdom.
- [XA] is available in Asia, Latin America, Middle East and Africa.
- [XAL] is available in Australia.

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## TECHNICAL SPECIFICATIONS

Specifications are subject to change without notice for further improvement.

[DIN 45 500]

### AMPLIFIER SECTION

| | | |
|---|---|---|
| 20 Hz ~ 20 kHz continuous power output both channels driven | | 2 x 50W (4Ω), 2 x 50W (8Ω) |
| 40 Hz ~ 16 kHz continuous power output both channels driven | | 2 x 50W (4Ω), 2 x 50W (8Ω) |
| 1 kHz continuous power output both channels driven | | 2 x 60W (4Ω), 2 x 55W (8Ω) |
| Total harmonic distortion | | |
| rated power at 20 Hz ~ 20 kHz | | 0.08% (4Ω), 0.04% (8Ω) |
| rated power at 40 Hz ~ 16 kHz | | 0.08% (4Ω), 0.04% (8Ω) |
| rated power at 1 kHz | | 0.04% (4Ω), 0.04% (8Ω) |
| half power at 20 Hz ~ 20 kHz | | 0.02% (8Ω) |
| half power at 1 kHz | | 0.009% (8Ω) |
| −26 dB power at 1 kHz | | 0.1% (4Ω) |
| 50 mW power at 1 kHz | | 0.13% (4Ω) |
| Intermodulation distortion | | |
| rated power at 250 Hz: 8 kHz= 4:1, 4Ω | | 0.08% |
| rated power at 60 Hz: 7 kHz=4:1, SMPTE, 8Ω | | 0.04% |
| Power bandwidth both channels driven, −3 dB | | 10 Hz ~ 35 kHz (4Ω) 17(4Ω), 34(8Ω) |
| Damping factor | | |
| Input sensitivity and impedance | PHONO | 2.5 mV/47kΩ |
| | AUX | 150 mV/27kΩ |
| | TAPE 2 | 150 mV/27kΩ |
| | TAPE 1 REC/PLAY | 180 mV/27kΩ |
| PHONO maximum input voltage (1 kHz, RMS) | | 150 mV |
| S/N | | |
| rated power (4Ω) | PHONO | 70 dB (80 dB, IHF, A, 8Ω) |
| | AUX | 88 dB (95 dB, IHF, A, 8Ω) |
| −26 dB power (4Ω) | PHONO | 64 dB |
| | AUX | 66 dB |
| 50 mW power (4Ω) | PHONO | 60 dB |
| | AUX | 60 dB |
| Frequency response | PHONO | RIAA standard curve ±0.3 dB (30 Hz ~ 15 kHz) |
| | AUX | 7 Hz ~ 45 kHz (−1 dB) ±0.2 dB(20 Hz ~ 20 kHz) |

Technics


Matsushita Electric Trading Co., Ltd.
P.O. Box 288, Central Osaka Japan

# SA-404

| | | |
|---|---|---|
| **Tone controls** | **BASS** | 50 Hz, +10 dB ~ −10 dB |
| | **TREBLE** | 20 kHz, +10 dB ~ −10 dB |
| **Acoustic controls (Tone control: "0" position)** | | |
| **LOW BOOST** | | 100 Hz, +6 dB |
| **HIGH BOOST** | | 10 kHz, +6 dB |
| **Low-cut filter** | | 100 Hz, −6 dB/oct. |
| **High-cut filter** | | 7 kHz, −6 dB/oct. |
| **Loudness control (volume at −30 dB)** | | 50 Hz, +9 dB |
| **Output voltage and impedance** | **TAPE, 1, 2 REC OUT** | 150 mV |
| | **TAPE 1 REC/PLAY** | 30 mV/82 kΩ |
| **Channel balance, AUX 250 Hz ~ 6,300 Hz** | | ±1.0 dB |
| **Channel separation, AUX 1 kHz** | | 55 dB |
| **Headphones output level and impedance** | | 470 mV/330Ω |
| **Load impedance** | **MAIN or REMOTE** | 4Ω ~ 16Ω |
| | **MAIN and REMOTE** | 8Ω ~ 16Ω |

## FM TUNER SECTION

| | | |
|---|---|---|
| **Frequency range** | | 88 ~ 108 MHz |
| **Sensitivity** | **S/N 30 dB** | 1.9μV (300Ω), 1.3μV (75Ω) |
| | **S/N 26 dB** | 1.7μV (300Ω), 1.2μV (75Ω) |
| | **S/N 20 dB** | 1.5μV (300Ω), 0.9μV (75Ω) |
| **IHF usable sensitivity** | | 1.9μV (IHF '58) |
| **IHF 46 dB stereo quieting sensitivity** | | 22μV/75Ω |
| **Total harmonic distortion** | **MONO** | 0.15% |
| | **STEREO** | 0.3% |
| **S/N** | **MONO** | 60 dB (75 dB, IHF) |
| | **STEREO** | 56 dB (70 dB, IHF) |
| **Frequency response** | | 20 Hz ~ 15 kHz, +1 dB ~ −2 dB |
| | | 20 Hz ~ 14 kHz, +1.5 dB ~ −1.5 dB |
| **Alternate channel selectivity** | | 70 dB |
| **Capture ratio** | | 1.2 dB |
| **Image rejection at 98 MHz** | | 60 dB |
| **IF rejection at 98 MHz** | | 75 dB |
| **Spurious response rejection at 98 MHz** | | 82 dB |
| **AM suppression** | | 55 dB |
| **Stereo separation** | **1 kHz** | 45 dB |
| | **10 kHz** | 35 dB |
| **Carrier leak** | **19 kHz** | −30 dB (−40 dB, IHF) |
| | **38 kHz** | −50 dB (−50 dB, IHF) |
| **Channel balance (250 Hz ~ 6,300 Hz)** | | ±1.5 dB |
| **Limiting point** | | 1.2μV |
| **Power bandwidth** | **IF amplifier** | 180 kHz |
| | **FM demodulator** | 1000 kHz |
| **Antenna terminals** | | 300Ω (balanced) |
| | | 75Ω (unbalanced) |

## AM TUNER SECTION

| | |
|---|---|
| **Frequency range** | 525 ~ 1605 kHz |
| **Sensitivity (S/R 20 dB)** | 30 μV, 300 μV/m |
| **Selectivity** | 30 dB |
| **Image rejection at 1,000 kHz** | 50 dB |
| **IF rejection at 1,000 kHz** | 40 dB |

## GENERAL

| | |
|---|---|
| **Power consumption** | 510W |
| **Power supply** | AC 50 Hz/60 Hz, 110V/120V/220V/240V |
| **Dimensions (W x H x D)** | 450 x 153 x 306 mm |
| | (17-23/32" x 6-1/32" x 12-1/16") |
| **Weight** | 9.8 kg, (21.6 lb.) |

# TECHNISCHE DATEN

Spezifikationen können infolge von verbesserungen ohne Ankündigung geändert werden.

## [DIN 45 500]

## VERSTÄRKERTEIL

| | | |
|---|---|---|
| **Dauerton-Ausgangsleistung bei 20 Hz ~ 20 kHz** | | |
| **beide Kanäle ausgesteuert** | | 2 x 50W ( 4Ω), 2 x 50W( 8Ω) |
| **Dauerton-Ausgangsleistung bei 40 Hz ~ 16 kHz** | | |
| **beide Kanäle ausgesteuert** | | 2 x 50W (4Ω), 2 x 50W (8Ω) |
| **Dauerton-Ausgangsleistung bei 1 kHz** | | |
| **beide Kanäle ausgesteuert** | | 2 x 60W (4Ω), 2 x 55W (8Ω) |
| **Gesamtklirrfaktor** | | |
| **Nennleistung bei 20 Hz ~ 20 kHz** | | 0.08% (4Ω), 0.04% (8Ω) |
| **Nennleistung bei 40 Hz ~ 16 kHz** | | 0.08% (4Ω), 0.04% (8Ω) |
| **Nennleistung bei 1 kHz** | | 0.04% (4Ω), 0.04% (8Ω) |
| **halbe Nennleistung bei 20 Hz ~ 20 kHz** | | 0.02% (8Ω) |
| **halbe Nennleistung bei 1 kHz** | | 0.009% (8Ω) |
| **−26 dB Leistung bei 1 kHz** | | 0.1% (4Ω) |
| **50 mW Leistung bei 1 kHz** | | 0.13% (4Ω) |
| **Intermodulationsfaktor** | | |
| **Nennleistung bei 250Hz: 8 kHz = 4:1, 4Ω** | | 0.08% |
| **Nennleistung bei 60 Hz: 7 kHz = 4:1, nach SMPTE, 8Ω** | | 0.04% |
| **Leistungsbandbreite beide** | | |
| **Kanäle ausgesteuert bei −3 dB** | | 10 Hz ~ 35 kHz (4Ω) |
| **Dämpfungsfaktor** | | 17 (4Ω), 34 (8Ω) |
| **Eingangsempfindlichkeit und -impedanz** | | |
| **Phono** | | 2.5mV/47kΩ |
| **Aux** | | 150mV/27kΩ |
| **Tape 2** | | 150mV/27kΩ |
| **Tape 1 Aufnahme/wiedergabe (TAPE 1 REC/PLAY)** | | 180mV/27kΩ |
| **Maximale TA-Eingangsspannung (1 kHz, eff.)** | | 150mV |
| **Geräuschabstand** | | |
| **Nennleistung (4Ω)** | **Phono** | 70 dB (80 dB, IHF, A, 8Ω) |
| | **Aux** | 88 dB (95 dB, IHF, A, 8Ω) |
| **−26 dB Leistung (4Ω)** | **Phono** | 64 dB |
| | **Aux** | 66 dB |
| **50 mW Leistung (4Ω)** | **Phono** | 60 dB |
| | **Aux** | 60 dB |
| **Frequenzgang** | **Phono** | RIAA-Standardkurve |
| | | ±0.3 dB (30 Hz ~ 15 kHz) |
| | **Aux** | 7 Hz ~ 45 kHz (−1 dB) |
| | | ±0.2 dB (20 Hz ~ 20 kHz) |
| **Klangregler** | | |
| **Baßregler (BASS)** | | 50 Hz, +10 dB ~ −10 dB |
| **Höhenregler (TREBLE)** | | 20 kHz, +10 dB ~ −10 dB |
| **Akustikregler (Klangregler in Stellung "0")** | | |
| **Tiefenverstärkung (LOW BOOST)** | | 100 Hz, +6 dB |
| **Höhenverstärkung (HIGH BOOST)** | | 10 kHz, +6 dB |
| **Rumpelfilter** | | 100 Hz, −6 dB/Okt. |
| **Rauschfilter** | | 7 kHz, −6 dB/Okt. |
| **Gehörrichtige Lautstärkekorrektur (Loudness)** | | |
| **(bei −30 dB Ausgangsleistung)** | | 50 Hz, +9 dB |
| **Ausgangsspannung und -impedanz** | | |
| **Tape 1/2 Aufnahme (TAPE 1, 2 REC OUT)** | | 150 mV |
| **Tape 1 Aufnahme/Wiedergabe (TAPE 1 REC/PLAY)** | | 30 mV/82 kΩ |
| **Kanalabweichung (Aux, 250 Hz ~ 6300 Hz)** | | ±1.0 dB |
| **Übersprechdämpfung (Aux, 1 kHz)** | | 55 dB |
| **Kopfhörerpegel und -impedanz** | | 470 mV/330Ω |
| **Lautsprecherimpedanz MAIN oder REMOTE** | | 4Ω ~ 16Ω |
| **MAIN und REMOTE** | | 8Ω ~ 16Ω |

## UKW-TUNERTEIL

| | | |
|---|---|---|
| **Wellenbereich** | | 88 ~ 108 MHz |
| **Eingangsempfindlichkeit** | | |
| **S/R 30 dB** | | 1.9μV (300Ω), 1.3μV (75Ω) |
| **S/R 26 dB** | | 1.7μV (300Ω), 1.2μV (75Ω) |
| **S/R 20 dB** | | 1.5μV (300Ω), 0.9μV (75Ω) |
| **Nutzempfindlichkeit nach IHF** | | 1.9μV (nach IHF '58) |
| **Stereoumschaltschwelle bei 46 dB nach IHF** | | 22μV/75Ω |
| **Gesamtklirrfaktor** | **Mono** | 0.15% |
| | **Stereo** | 0.3% |
| **Geräuschabstand** | **Mono** | 60 dB (75 dB nach IHF) |
| | **Stereo** | 56 dB (70 dB nach IHF) |
| **Frequenzgang** | | 20 Hz ~ 15 kHz (+1 dB ~ −2 dB) |
| | | 20 Hz ~ 14 kHz (+1.5 dB ~ −1.5 dB) |
| **Trennschärfe bei Störsender** | | 70 dB |
| **Einfangverhältnis** | | 1.2 dB |
| **Spiegelfrequenz-Dämpfung bei 98 MHz** | | 60 dB |
| **ZF-Dämpfung bei 98 MHz** | | 75 dB |
| **Ansprechdämpfung auf Nebenfrequenzen bei 98 MHz** | | 82 dB |
| **AM-Unterdrückung** | | 55 dB |
| **Übersprechdämpfung** | **1 kHz** | 45 dB |
| | **10 kHz** | 35 dB |
| **Trägerrest** | **19 kHz** | −30 dB (−40 dB nach IHF) |
| | **38 kHz** | −50 dB (−50 dB nach IHF) |
| **Kanalabweichung (250 Hz ~ 6300 Hz)** | | ±1.5 dB |
| **Begrenzereinsatz** | | 1.2μV |
| **Bandbreite ZF-Verstärker** | | 180 kHz |
| **UKW-Demodulator** | | 1000 kHz |
| **Antennenanschluß** | | 300Ω (symmetrisch) |
| | | 75Ω (unsymmetrisch) |

## AM-TUNERTEIL

| | |
|---|---|
| **Wellenbereiche** | 525 ~ 1605 kHz |
| **Eingangsempfindlichkeit (S/R 20 dB)** | 30μV, 300μV/m |
| **Trennschärfe** | 30 dB |
| **Spiegelfrequenz-Dämpfung bei 1000 kHz** | 50 dB |
| **ZF-Dämpfung bei 1000 kHz** | 40 dB |

## ALLGEMEINE DATEN

| | |
|---|---|
| **Leistungsaufnahme** | 510W |
| **Netzspannung** | Wechselstrom 50 Hz/60 Hz, 110V/120V/220V/240V |
| **Abmessungen (BxHxT)** | 450 x 153 x 306 mm |
| **Gewicht** | 9.8 kg |

## DONNEES TECHNIQUES Sujet à changment sans préaris.

## [DIN 45 500]

### SECTION AMPLIFICATEUR

| | | |
|---|---|---|
| **Puissance de sortie continue de 20 Hz ~ 20 kHz, les deux canaux en circuit** | | 2 x 50W (4Ω), 2 x 50W (8Ω) |
| **Puissance de sortie continue de 40 Hz ~ 16 kHz, les deux canaux en circuit** | | 2 x 50W (4Ω), 2 x 50W (8Ω) |
| **Puissance de sortie continue à 1 kHz les deux canaux en circuit** | | 2 x 60W (4Ω), 2 x 55W (8Ω) |
| **Distorsion harmonique totale** | | |
| **à puissance nominale (20 Hz ~ 20 kHz)** | | 0.08% (4Ω), 0.04% (8Ω) |
| **à puissance nominale (40 Hz ~ 16 kHz)** | | 0.08% (4Ω), 0.04% (4Ω) |
| **à puissance nominale (1 kHz)** | | 0.04% (4Ω), 0.04% (8Ω) |
| **à demi-puissance (20 Hz ~ 20 kHz)** | | 0.02% (8Ω) |
| **à demi-puissance (1 kHz)** | | 0.009% (8Ω) |
| **puissance de -26 dB à 1 kHz** | | 0.1% (4Ω) |
| **puissance de 50 mW à 1 kHz** | | 0.13% (4Ω) |
| **Distorsion d'intermodulation** | | |
| **a puissance nominale à 250 Hz: 8 kHz= 4:1, 4Ω** | | 0.08% |
| **à puissance nominale à 60 Hz: 7 kHz= 4:1, SMPTE, 8Ω** | | 0.04% |
| **Réponse de fréquences** | | |
| **les deux canaux en circuit, -3 dB** | | 10 Hz ~ 35 kHz (4Ω) |
| **Coefficient d'amortissement** | | 17 (4Ω), 34 (8Ω) |
| **Sensibilité et impédance d'entrée** | | |
| **PHONO** | | 2.5 mV/47 kΩ |
| **AUX (AUX)** | | 150 mV/ 27 kΩ |
| **BANDE 2 (TAPE 2)** | | 150 mV/27 kΩ |
| **BANDE1, ENREGISTREMENT/LECTURE (TAPE 1 REC/PLAY)** | | 180 mV/27 kΩ |
| **PHONO (tension d'entrée maximum, 1 kHz RMS)** | | 150 mV |
| **Signal/Bruit** | | |
| **à puissance nominale (4Ω)** | **PHONO** | 70 dB (80 dB, IHF, A.8Ω) |
| | **AUX** | 88 dB (95 dB, IHF, A. 8Ω) |
| **puissance de - 26 dB (4Ω)** | **PHONO** | 64 dB |
| | **AUX** | 66 dB |
| **puissance de 50 mW (4Ω)** | **PHONO** | 60 dB |
| | **AUX** | 60 dB |
| **Réponse de fréquence** | **PHONO** | Courbe nominale RIAA ±0.3 dB(30 Hz ~ 15 kHz) |
| | **AUX** | 7 Hz ~ 45 Hz (-1 dB) ±0.2 dB (20 Hz ~ 20 kHz) |
| **Réglage de la tonalité** | **BASSES (BASS)** | 50 Hz, +10 dB ~ -10 dB |
| | **AIGUS (TREBLE)** | 20 kHz, +10 dB ~ -10 dB |
| **Commandes acoustiques (Commandes de tonalité sur "0")** | | |
| **AMPLIFICATION DES BASSES (LOW BOOST)** | | 100 kHz, +6 dB |
| **AMPLIFICATION DES AIGUS (HIGH BOOST)** | | 10 kHz, +6 dB |
| **Filtre coupe-bas** | | 100 Hz, -6 dB/oct. |
| **Filtre coupe-hauts** | | 7 kHz, -6 dB/oct. |
| **Compensateur physiologique(volume à -30 dB)** | | 50 Hz, +9 dB |
| **Tension de sortie et impédance** | | |
| **SORTIE ENREGISTREMENT/BANDE 1, 2 (TAPE 1, 2 REC OUT)** | | 150 mV |
| **ENREGISTREMENT/LECTURE BANDE 1 (TAPE 1 REC/PLAY)** | | 30 mV/82 kΩ |
| **Equilibrage des canaux, AUX 250 Hz ~ 6,300 Hz** | | ±1.0 dB |
| **Séparation des canaux, AUX 1 kHz** | | 55 dB |
| **Niveau de sortie des casques et impédance** | | 470 mV/330Ω |
| **Impédance de charge** | | |
| **PRINCIPALE ou AUXILIAIRE (MAIN or REMOTE)** | | 4Ω ~ 16Ω |
| **PRINCIPALE et AUXILIAIRE (MAIN and REMOTE)** | | 8Ω ~ 16Ω |

### SECTION SYNTONISATEUR FM

| | | |
|---|---|---|
| **Gamme de fréquence** | | 88 ~ 108 MHz |
| **Sensibilité** | **S/B 30 dB** | 1.9μV (300Ω), 1.3μV (75Ω) |
| | **S/B 26 dB** | 1.7μV (300Ω), 1.2μV (75Ω) |
| | **S/B 20 dB** | 1.5μV (300Ω), 0.9μV (75Ω) |
| **Sensibilité utilisable IHF** | | 1.9μV (IHF '58) |
| **Sensibilité stéréo au seuil de 46 dB, IHF** | | 22 μV/75Ω |
| **Distorsion harmonique totale** | **MONO** | 0.15% |
| | **STEREO** | 0.3% |
| **Signal/Bruit** | **MONO** | 60 dB (75 dB, IHF) |
| | **STEREO** | 56 dB (70 dB, IHF) |
| **Réponse de fréquence** | | 20 Hz ~ 15 kHz, + 1 dB ~ -2 dB 20 Hz ~ 14 kHz, +1.5 dB ~ -1.5 dB |
| **Sélectivitie alternée par canal** | | 70 dB |
| **Taux de capture** | | 1.2 dB |
| **Rejection d'image à 98 MHz** | | 60 dB |
| **Rejection FI à 98 MHz** | | 75 dB |
| **Rejection de réponse parasite à 98 MHz** | | 82 dB |
| **Suppression AM** | | 55 dB |
| **Séparation stéréophonique** | **1 kHz** | 45 dB |
| | **10 kHz** | 35 dB |
| **Fuite de porteuse** | **19 kHz** | -30 dB (-40 dB, IHF) |
| | **38 kHz** | -50 dB (-50 dB, IHF) |
| **Equilibrage de canaux (250 Hz ~ 6,300 Hz)** | | ±1.5 dB |
| **Point de limite** | | 1.2μV |
| **Largeur de band** | **Amplificateur FI** | 180 kHz |
| | **Démodulateur FM** | 1000 kHz |
| **Bornes d'antenne** | | 300Ω (symétrique) 75Ω (asymétrique) |

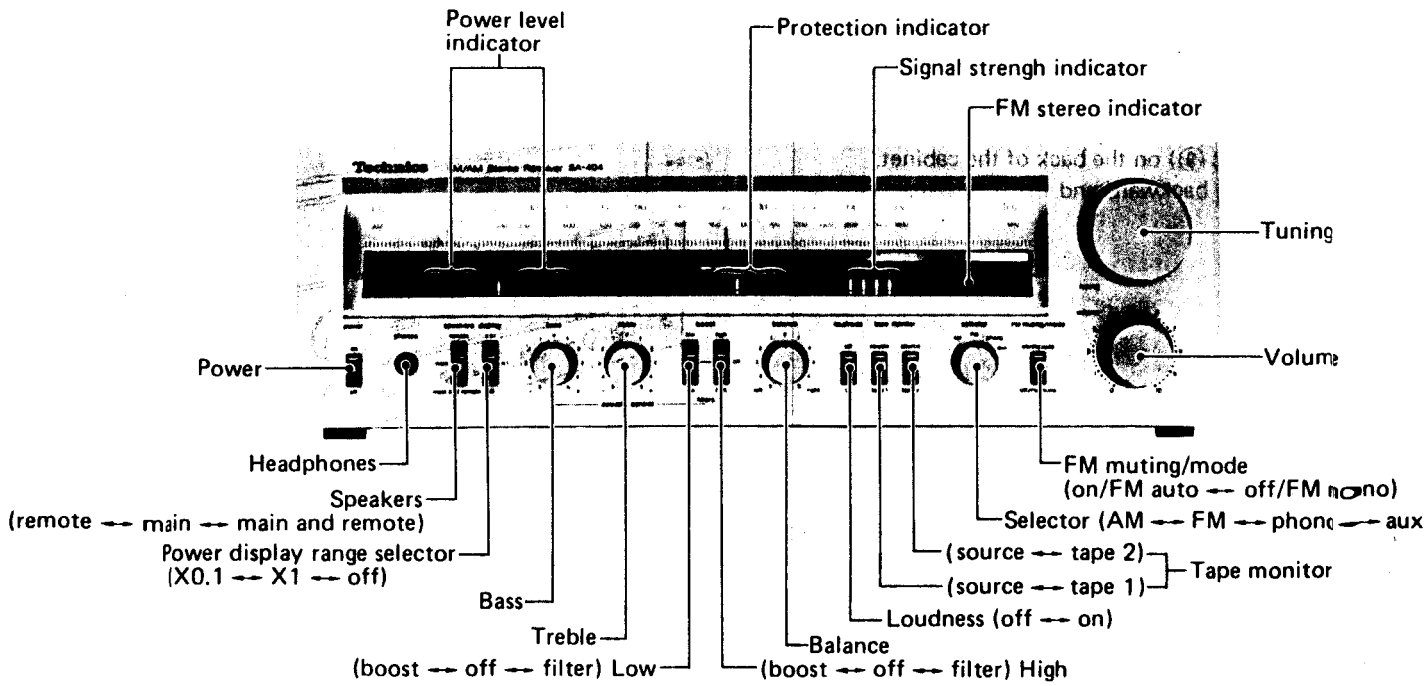
### SECTION SYNTONISATEUR AM

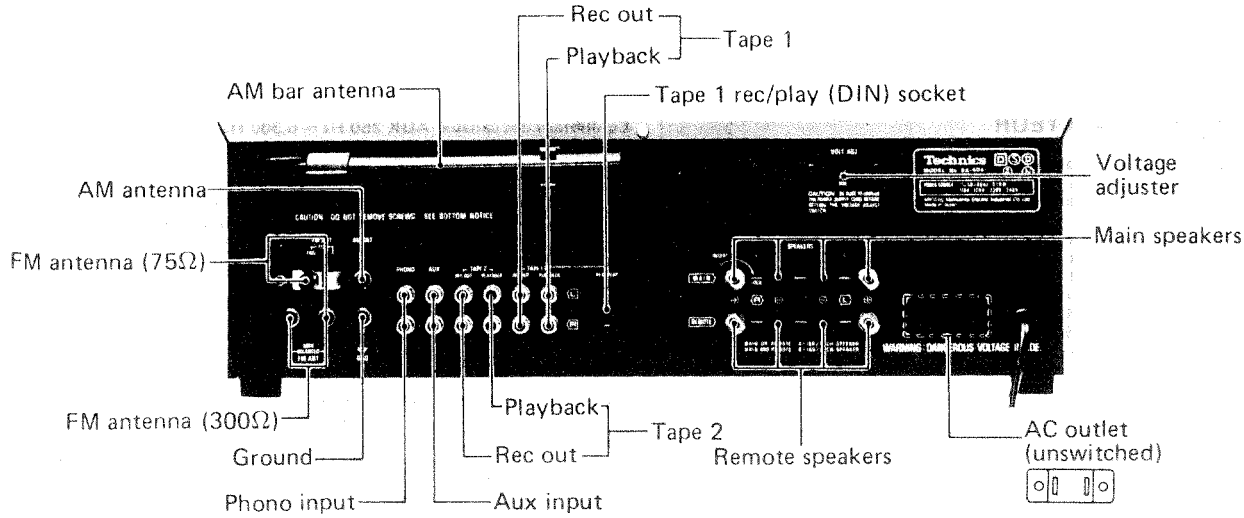
| | |
|---|---|
| **Gamme de fréquence** | 525 ~ 1605 kHz |
| **Sensibilité (S/B 20 dB)** | 30 μV, 300 μV/m |
| **Sélectivité** | 30 dB |
| **Réjection d'image à 1,000 kHz** | 50 dB |
| **Réjection FI à 1,000 kHz** | 40 dB |

### DIVERS

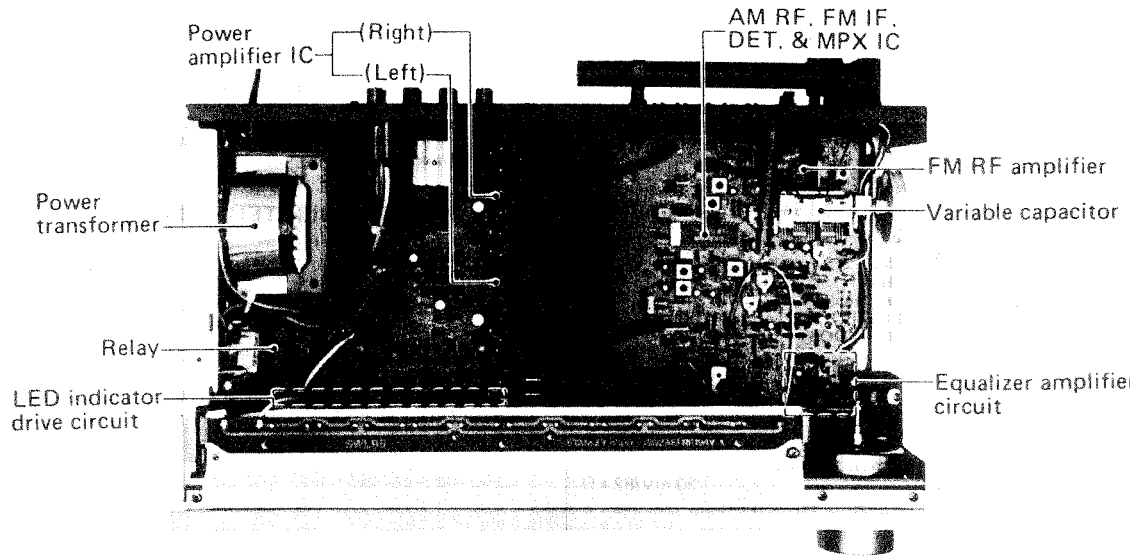
| | |
|---|---|
| **Consommation** | 510W |
| **Alimentaiton** | CA 50 Hz/60 Hz, 110V/120V/220V/240V |
| **Dimensions (L x H x Pr)** | 450 x 153 x 306 mm |
| **Poids** | 9.8 kg |

## ■ LOCATION OF CONTROLS





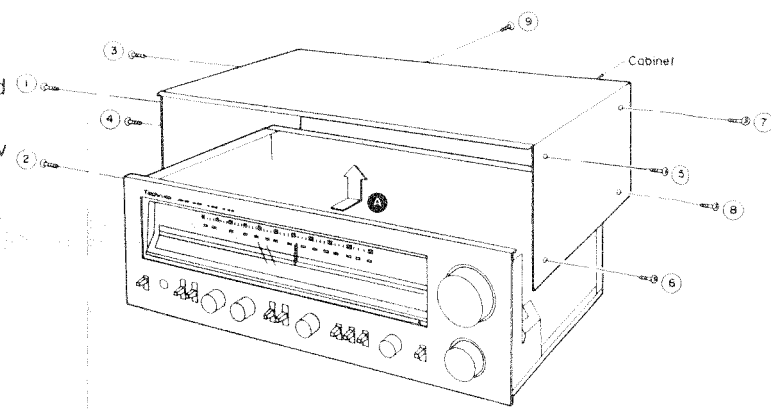

• **The products for destination [XA] is equipped with AC outlet.**




## ■ DISASSEMBLY INSTRUCTIONS

### * How to remove the cabinet

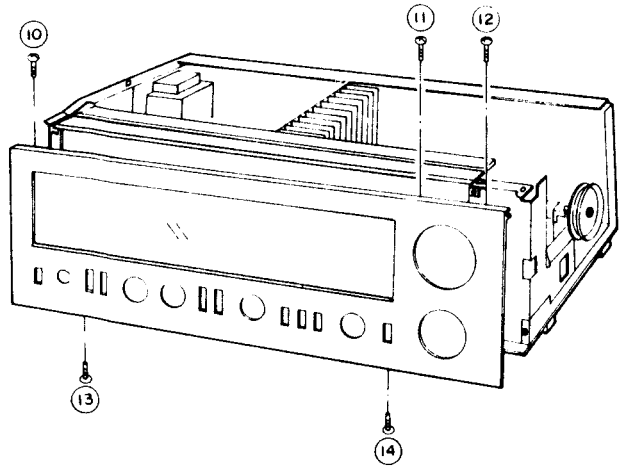
1. Remove the 8 setscrews (Fig. 1: ①~⑧) on the side and 1 setscrew (Fig. 1: ⑨) on the back of the cabinet.
2. Shift the cabinet backward and lift it upward. (Arrow Ⓐ in Fig. 1)



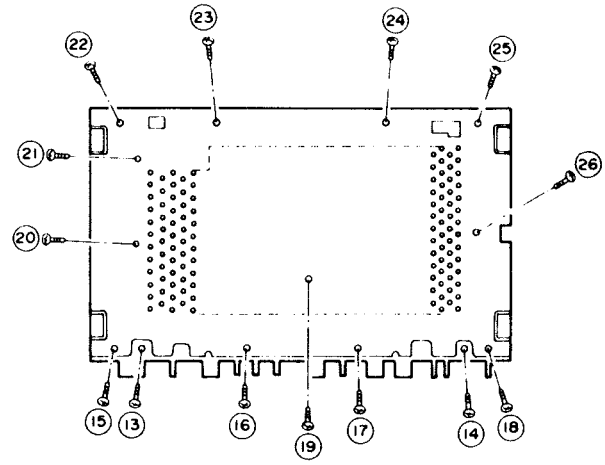

[Fig. 1]

### * How to remove the front panel and the bottom board

1. Remove the 5 setscrews (Fig. 2 : ⑩ ~ ⑭ ) holding the front panel and remove the 2 setscrews (Fig. 3 : ⑯ , ⑰ ) holding the bottom board.
2. Pull the front panel outward from the front of the unit.
3. To remove the bottom board, remove the 12 setscrews (Fig. 3 : ⑮ ~ ㉖ ) holding the bottom board.



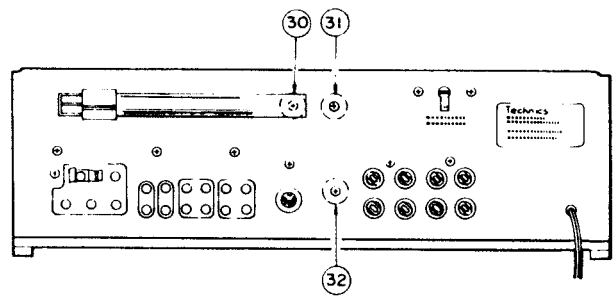

[Fig. 2]




[Fig. 3]

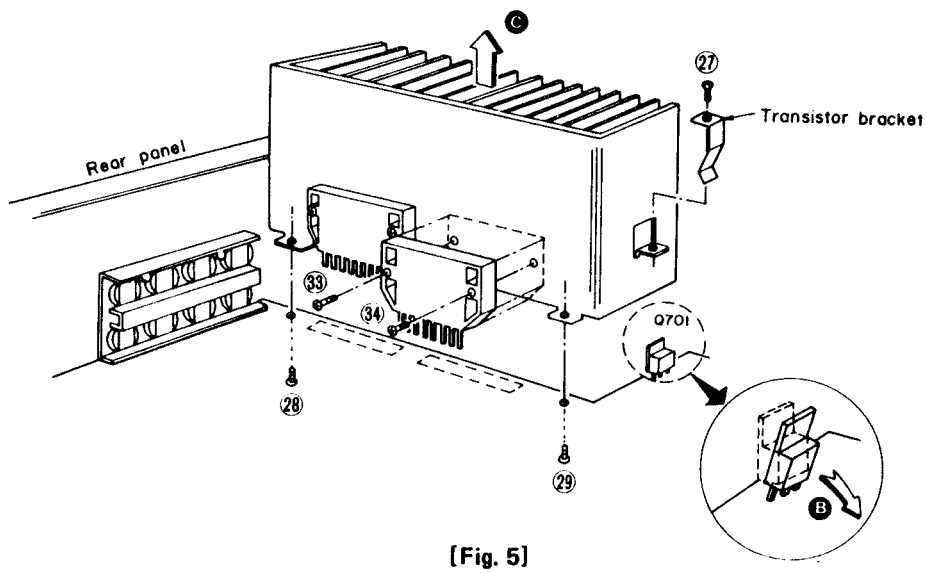
*** How to remove the power IC**

1. Remove the cabinet and bottom board. (Refer to the sections "How to remove the cabinet" and "How to remove the front panel and the bottom board".)
2. Remove the solder of power IC for both Lch and Rch.
3. Remove the transistor bracket setscrew (Fig. 5 : ㉗) to detach the transistor bracket.
   Unsolder the transistor Q701 and bend it down in the direction of the arrow Ⓑ.
4. Remove the 2 setscrews (Fig. 5 : ㉘, ㉙) at the bottom of the heat sink and the 3 setscrews (Fig. 4 : ㉚ ~ ㉜) at the rear panel, and then remove the heat sink along with the power IC in the direction of the arrow Ⓒ. (Refer to Fig. 5.)




[Fig. 4]

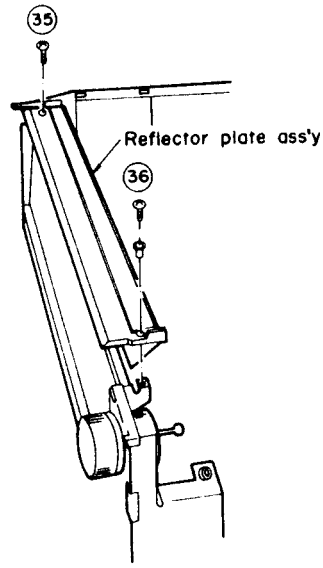
5. Remove the 2 setscrews (Fig. 5 : ㉝, ㉞) used to secure the power IC on the heat sink, and then pull the power IC.
6. When mounting the power IC, apply silicone compound (or equivalent heat diffuser) to the back of power IC, and then follow the steps 1 ~ 5 reversely.



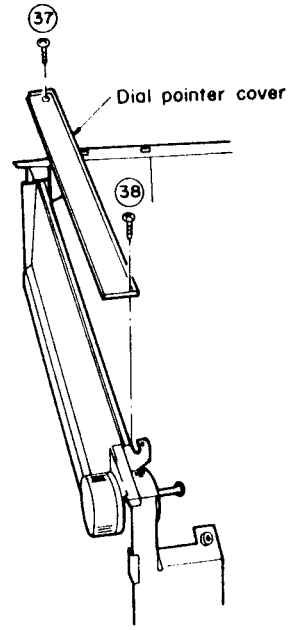

[Fig. 5]

*** How to remove the LED indicator P.C.B. and LED indicator drive circuit P.C.B.**

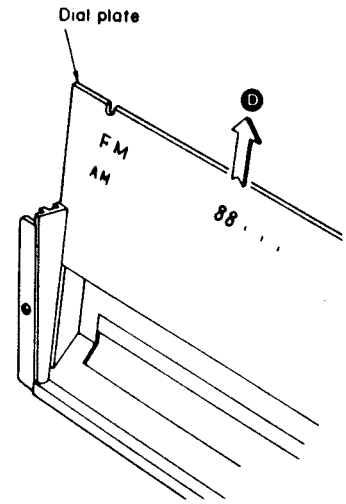
1. Remove the cabinet (Refer to the section "How to remove the cabinet".)
2. Remove the 2 setscrews (Fig. 6 : ㉟, ㊱) holding the reflector plate ass'y and remove the reflector plate ass'y.
3. Remove the 2 setscrews (Fig. 7 : ㊲, ㊳) holding the dial pointer cover and remove the dial pointer cover.
4. Move the dial plate slightly toward the top of the unit. (Fig. 8 : Ⓓ)
5. Disconnect the dial cord and remove the 2 setscrews (Fig. 9 : ㊴, ㊵), which fasten the dial scale mirror.
   Next, raise the dial scale mirror in the direction of the arrow Ⓔ and then pull it out in the direction of the arrow Ⓕ.
   (Refer to Fig. 10.)




[Fig. 6]

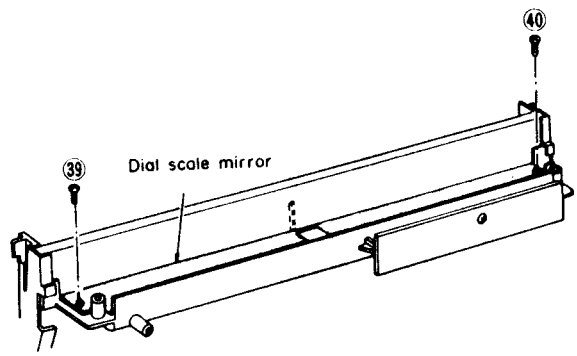



[Fig. 7]

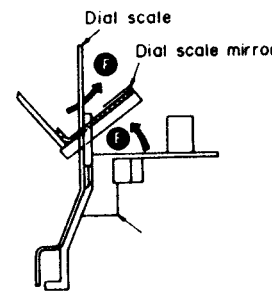



[Fig. 8]

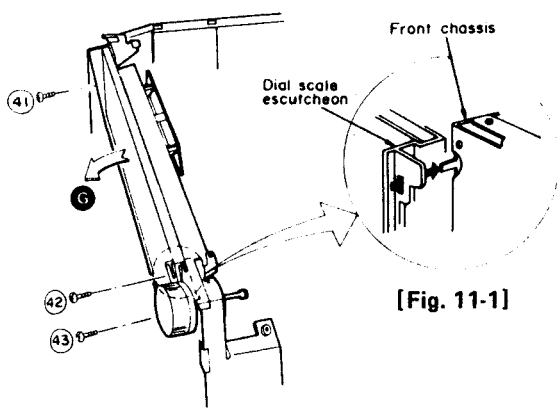
6. Remove the 3 setscrews (Fig. 11 : ㊶ ~ ㊸ ) which fasten the dial scale ass'y and then detach the dial scale ass'y in the direction of the arrow Ⓖ (Fig. 11.)
7. The LED indicator P.C.B. is secured with the lug projected from the LED frame. So, bend the lug down ( Ⓗ in Fig. 12) to remove the LED indicator P.C.B.
8. Remove the setscrew (Fig. 12 : ㊹ ) which fastens the LED indicator drive circuit P.C.B. Then the LED indicator drive circuit P.C.B. can be detached.




[Fig. 9]

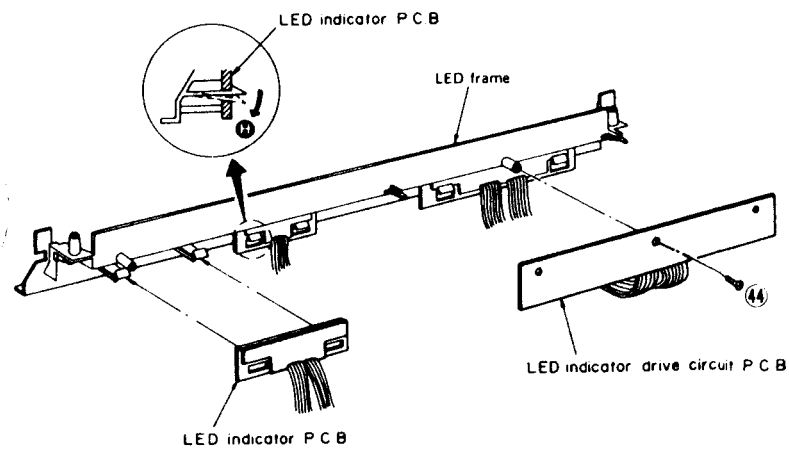



[Fig. 10]



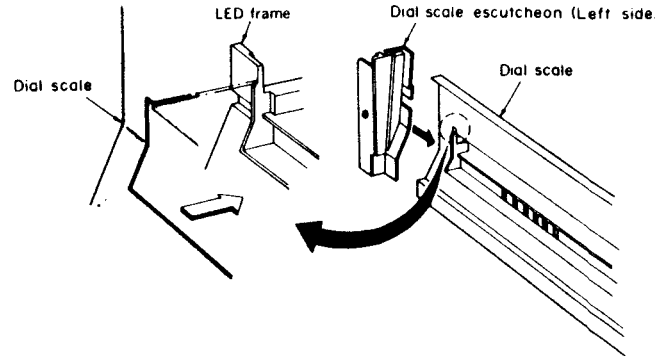

[Fig. 11-1]

[Fig. 11]



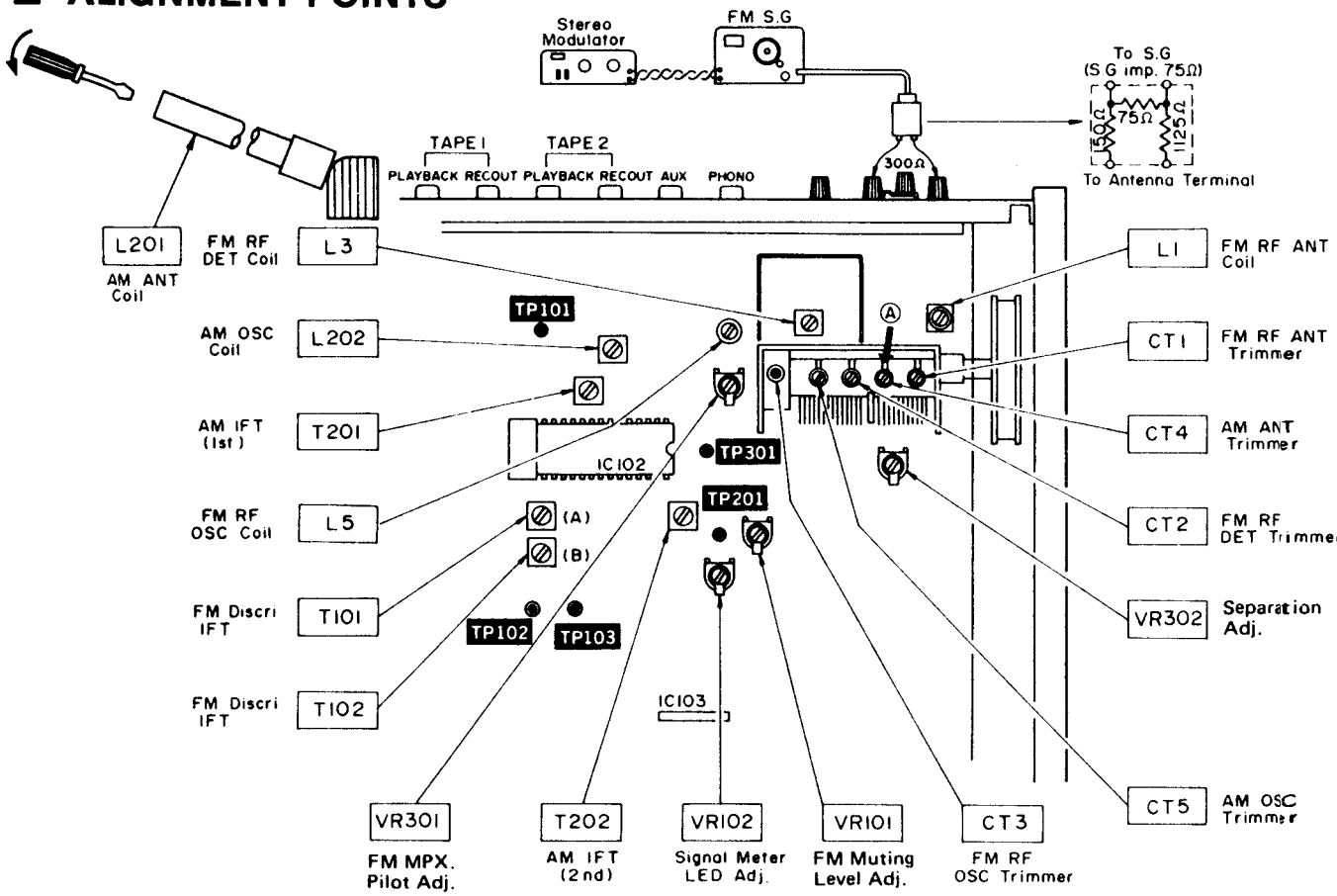

[Fig. 12]

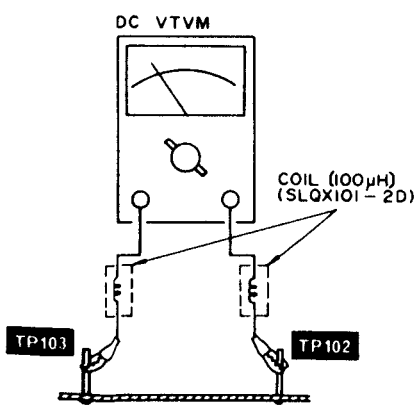
9. When re-assembling, reversely follow the steps 1 through 8. To install the dial scale, completely fit the LED frame in the grooves of the dial scale and then install the right and left dial scale escutcheons (Fig. 13).
   Next, completely fit the right and left dial scale escutcheons onto the lugs projected from the front chassis and secure them with setscrews (Fig. 11-1).



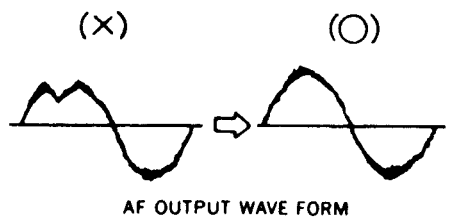

[Fig. 13]

## ■ ALIGNMENT POINTS

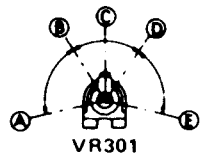



[Fig. 15]
(Abb. 1)

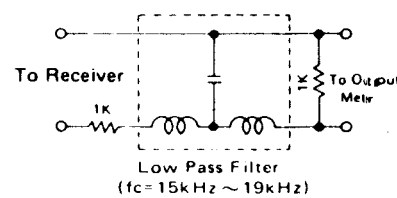



[Fig. 16]
(Abb. 2)




A – B, D – E: Stereo OFF Position.
B – D: Stereo ON Position (Indicator Lighting).
C: Adjust Point of Pilot Circuit.

[Fig. 17]
(Abb. 3)




[Fig. 18]
(Abb. 4)

# ■ ALIGNMENT INSTRUCTIONS — ENGLISH

**Notes:**

1. Band selector switch . . . . . {AM (AM Alignment) / FM (FM Alignment)
2. FM muting & mode switch . . . off/mono
3. Fix the bottom board to chassis before adjustment.
4. Maintain line voltage at rated voltage.
5. 300Ω FM dummy antenna.
6. Output of signal generator should be no higher than necessary to obtain an output reading.
7. Adjust the antenna coil (L201) position by using a screw driver so that it is at approximately 25 degrees to the rear panel.

| | AM/FM SIGNAL GENERATOR | | DIAL SETTING | INDICATOR (VTVM or SCOPE) | ADJUSTMENT POINTS | REMARKS |
|---|---|---|---|---|---|---|
| | CONNECTION | FREQUENCY | | | | |
| | **AM ALIGNMENT** | | | | | |
| 1 | High side through 0.001μF to **AM** antenna trimmer terminal. (point A). Common to chassis. | 450kHz (30%) Mod. with 400Hz) (For unted Kingdom to 470kHz) | Point of non-inter-ference | Connect AC VTVM or scope to "OUTPUT" terminals. | T201 (1st IFT)<br>T202 (2nd IFT) | Adjust for maximum output. |
| 2 | Fashion loop of several turns of wire and radiate signal into loop of receiver | 600kHz (30% Mod. with 400Hz) | 600kHz | Connect AC VTVM or scope to "OUTPUT" terminals. | L202 (OSC Coil)<br>L201 (ANT Coil) | Adjust for maximum output. Adjust ferrite core of L201 by screw drive. |
| 3 | Fashion loop of several turns of wire and radiate signal into loop of receiver. | 1500kHz (30% Mod. with 400Hz) | 1500kHz | Connect AC VTVM or scope to "OUTPUT" terminal. | CT5 (OSC Trimmer)<br>CT4 (ANT Trimmer) | Adjust for maximum output.<br>Repeat steps 2 and 3. |
| | **FM IF ALIGNMENT** | | | | | |
| 4 | | No-Signal | Point of non-inter-ference | Connect DC VTVM to TP102, TP103 terminals. (Refer to fig. 15) | T101 (DISCRI IFT) A | • FM muting/mode switch to "on/auto" position.<br>• Adjust T101 (A) core so that voltage measured in signal mode is 0V in 300mV range. |
| | **FM RF ALIGNMENT** | | | | | |
| 5 | Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna. | 90MHz (100% Mod. with 400Hz) weak input | 90MHz | Connect scope to "OUTPUT" terminal. | L5 (OSC Coil)<br>L3 (RF DET Coil)<br>L1 (ANT Coil) | • Add weak input so that noise is included in the output wave form.<br>• Make the adjustment so that the output wave form is vertically symmetrical. (Fig. 16)<br>• Repeat the steps 5 and 6 until the frequency correctly matches the dial scale. |
| 6 | | 106MHz (100% Mod. with 400Hz) weak input | 106MHz | Connect scope to "OUTPUT" terminal. | CT3 (OSC Trimmer)<br>CT2 (RF DET Trimmer)<br>CT1 (ANT Trimmer) | |
| | **FM MONO DISTORTION ALIGNMENT** | | | | | |
| 7 | Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna. | 100MHz (100% Mod. with 400Hz) | 100MHz | Connect distortion meter to "OUTPUT" terminals. | T102 (DISCRI IFT) B | • Set the FM muting/mode switch to "on/auto" and then check step 4 in no signal mode.<br>• If it is deflected, re-adjust A (primary side) of T101.<br>• Adjust T102 core so that distortion of right and left channels are minimized.<br>• Repeat steps (4) and (7). |
| | **SIGNAL METER LED LIGHT LEVEL ALIGNMENT** | | | | | |
| 8 | Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna. | 100MHz (100% Mod. with 400Hz) | 100MHz | Connect scope to "OUTPUT" terminal | VR102 (LED LIGHT LEVEL) | • With weak input signal (noise produced) at 100MHz (100% Mod. with 400Hz) applied, make tuning so that the upper and lower wave forms are symmetrical.<br>• With the input set at 45dB (signal generator at 57dB), adjust VR102 so that all the signal strength LED's light up. |
| | **FM MUTING LEVEL ALIGNMENT** | | | | | |
| 9 | Connect to FM 300Ω antenna terminal through 300Ω FM dummy antenna. Apply 16dB (6.3μV) to receiver. | 100MHz (100% Mod. with 400Hz) | 100MHz | Connect AC VTVM or scope to "OUTPUT" terminals. | VR101 (MUTING LEVEL) | • FM muting/mode switch to "on/auto".<br>With the input set at 16dB (signal generator at 28dB) product for [XA] only 12dB (signal generator at 24dB).<br>adjust so that output can be obtained. |

| | FM MPX PILOT ALIGNMENT | |
|---|---|---|
| | Using frequency counter | Using alternate system |
| 10 | **1** 100MHz Non-modulated mono signal applied to set.<br>**2** FM muting/mode switch to "on/FM auto".<br>**3** Connect frequency counter to **TP301** through resistor (100kΩ).<br>**4** Adjust **VR301** to 19kHz, ± 30Hz. | **1** Apply stereo signal from generator or stereo station to receiver.<br>**2** Adjust **VR301** until stereo indicator lights up. Cement arm of **VR301** as shown in fig. 17. |
| | **SEPARATION ALIGNMENT** | |
| | PREPARATIONS | ADJUSTING PROCEDURE |
| 11 | **1** Add 100MHz, 1kHz, 30% pilot 10% modulation, 60dB stereo signal to the receiver.<br>**2** Connect AC VTVM or scope to output terminal through low pass filter. (Refer to fig. 18) | **1** FM muting/mode switch to "on/auto".<br>**2** Adjust **VR302** so that **R** output is minimized when stereo modulator is in **L** (Lch.modulation) mode and that **L** output is minimized in **R** mode. |

# ■ ANWEISUNGES FÜR ABGLEICHUNG — DEUTSCH

**(Für Deutschland)**

**Anmerkungen:**

1. Bereichsschalter . . . . . {AM (MW Abgleich) / FM (UKW Abgleich)
2. FM Muting/Mode Schalter . . . . . .off/mono
3. Netzspannung auf ihren Sollwert halten.
4. UKW-Kunstantenne, 300 ohm.
5. Der Ausgang des Meßsenders darf nicht höher sein als unbedingt notwendig für eine gute Ablesung.
6. Nittels eines Schraubenziehers die Stellung der Antennenspule (L201) so einstellen, daß, sie gegen die Rückenplatte einen Winkel von ca., 25° macht.
7. Vor Einstellungen, die Bodenplatte des Chassis befestigen.

| | MW/UKW MESSENDER | | FREQUENZ STELLUNG DES TUNER | ANZEIGEGEIRÄT (Röhrenvoltmeter oder Oszillograph ozw. Klirrfactor-Meßgerät) | ABGLEICHS-PUNKTE | BEMERKUNGEN |
|---|---|---|---|---|---|---|
| | ANSCHLUSS | FREQUENZ | | | | |
| | **MW-ABGLEICH** | | | | | |
| 1 | Heißes Ende des meßsenders über einen 0.001μF. Kondensator an den AM Antenneneingang schließen. Kaltes Ende an Masse. | 450kHz (400Hz Modulat., 30%) | Kein Empfang | Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang. "OUTPUT" schließen. | T201 (1. IFT)<br>T202 (2. IFT) | Auf max. Ausgang abgleichen. |
| 2 | Das Meßsendersignal induktiv in den Tuner speisen. Hierzu behelfsmäßig eine Rahmenantenne fertigen und an den Eingang schließen. | 600kHz (400Hz Modulat., 30%) | 600kHz | Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang. "OUTPUT" schließen. | L202 (Osc. Spule)<br>L201 (Ant. Spule) | Auf max. Ausgang abgleichen. Den Ferritkern von L201 mit einem Schraubendreher justieren. |
| 3 | Das Meßsendersignal induktiv in den Tuner speisen. Hierzu behelfsmäßig eine Rahmenantenne fertigen und an den Eingang schließen. | 1500kHz (400Hz Modulat., 30%) | 1500kHz | Wechselstrom Röhrenvoltmeter oder Oszillograph über den Ausgang "OUTPUT" scheißen. | CT5 (Osc. Trimmer)<br>CT4 (Ant. Trimmer) | Auf max. Ausgang abgleichen. Schritt (2) und (3) sing zu wiederholen. |
| | **UKW-ZF-ABGLEICH** | | | | | |
| 4 | | Kein Signal | Kein Empfang | Elektronisches (GS-Voltmeter an Klemmen TP102 und TP103 anschließen.(Abb. 1) | T101<br>(Diskriminator IFT) A | 1. FM muting/mode-Schalter auf "on/auto".<br>2. Den Kern von T101 (A) so justieren, daß die gemessene Spannung im signallosen Modus 0V im 300mV Bereich beträgt. |
| | **UKW-HF-ABGLEICH** | | | | | |
| 5 | Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. | 87.5MHz (400Hz Modulat., 100%) | 87.5MHz (Frequenz Min.) | Oszillograph über den Ausgang "OUTPUT" schließen. | L5 (Osc. Spule) | 1. FM Muting-Schalter auf OFF stellen.<br>2. Auf max. Ausgang abgleichen. |
| 6 | Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. | 90MHz (400Hz Modulat., 100%) | 90MHz | Oszillograph über den Ausgang "OUTPUT" schließen. | L3 (1. Det. Spule)<br>L1 (Ant. Spule) | 1. Einen schwachen Eingang geben, bei den Geräusch in der Ausgangswellenform enthalten wird.<br>2. So einstellen, daß die Ausgangswellenform vertikal symmetrisch wird. (Abb 2)<br>3. Die Einstellung von (5), (6) und (7) wiederholen, bis die Frequenz mit der Skala übereinstimmt. |
| 7 | Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. | 106MHz (400Hz Modulat., 100%) | 106MHz | Oszillograph über den Ausgang "OUTPUT" schließen. | CT3 (Osc. Trimmer)<br>CT2 (RF DET Trimmer)<br>CT1 (Ant. Trimmer) | |

| | MW/UKW MESSENDER ANSCHLUSS | MW/UKW MESSENDER FREQUENZ | FREQUENZ STELLUNG DES TUNER | ANZEIGEGEIRÄT (Röhrenvoltmeter oder Oszillograph ozw. Klirrfactor-Meßgerät) | ABGLEICHS-PUNKTE | BEMERKUNGEN |
|---|---|---|---|---|---|---|
| | **ABGLEICH AUF MIN. VERZERRUNG IN STELLUNG UKW- MONO** | | | | | |
| 8 | Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. | 100MHz (400Hz Modulat., 100%) | 100MHz | Klirrfaktor-Meßbrücke über den Ausgang "OUTPUT" schließen. | T102 (Diskriminator FT) B | 1. FM muting/mode-Schalter auf "on/auto" stellen dann in signalloser Mode den Schritt (4) feststellen.<br>2. Wenn Abweichung vorliegt. A (primäre Seite) von T101 wieder einstellen.<br>3. T102 (B) Kern für minimale Verzerrung der rechten und linken Kanäle justieren. |
| | **ABGLEICHEN DES SIGNALMETER-LED (LICHTERZEUGENDE DIODE)-ANZEIGERS** | | | | | |
| 9 | Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen. | 100MHz (400Hz Modulat., 100%) | 100MHz | Oszillograph über den Ausgang "OUTPUT" schließen. | VR102 (Meter volume) | 1. Bei schwachem Eingangssignal (Geräusch erzeugt) von 100MHz (100% moduliert bei 400Hz), so abstimmen, daß die obere und untere Wellenform symmetrisch werden.<br>2. Mit Eingang auf 45dB (Signalgenerator auf 57dB) gestellt, den einstellbaren Widerstand VR102 so regulieren, daß alle LED (Leuchtdioden) des Signalmeters aufleuchten. |
| | **UKW-MUTING-ABGLEICH** | | | | | |
| 10 | Meßsender über eine Kunstantenne an den UKW-Antenneneingang schließen.<br>Meßsender auf 16dB einstellen. | 100MHz (400Hz Modulat., 100%) | 100MHz | Röhrenvoltmeter oder Oszillograph über den Lautsprecher schließen. | VR101 (UKW-Muting) | Muting Schalter auf "ON" stellen.<br>So einstellen, daß ein Ausgang zu vernehmen ist. |
| | **UKW-STEREO-DEKODER-ABGLEICH** | | | | | |
| | Unter Verwendung eines Zählers | | | Alternativ-Meßmethode | | |
| 11 | 1. Unmoduliertes Mono-Signal 100MHz in das Gerät speisen.<br>2. FM Muting/mode-Schalter auf "on/auto" stellen.<br>3. Zähler über einen Widerstand 100kΩ an **TP301** schließen.<br>4. **VR301** auf 19kHz ± 30Hz einstellen. | | | 1. Stereosignal entweder von einem Stereogenerator. oder einem Sender einspeisen.<br>2. **VR301** so einstellen, bis die Stereolampe auf leuchtet. Schleifer von **VR301** sichern, wie in Abb. 3 gezeigt. | | |
| | **KANALTRENNUNG-ABGLEICH** | | | | | |
| 12 | 1. Das gerät auf 100MHz, 1kHz, Pilot 10% Modulation, 60dB Stereosignal einstellen.<br>2. Wechselstrom-Röhrenvoltmeter oder, Oszillograph durch Tiefpaß filter (fc = 15 ~ 19KHz) an Ausgangsanschlüsse des Gerätes anschließen. (Abb. 4)<br>3. FM muting/mode-Schalter auf "on/auto".<br>4. **VR302** auf minimale Anzeige des **R**-Ausgangs bei Stereo-modulator in **L**-(L-Kanalmodulation) Modus, und auf minimale Anzeige des **L**-Ausgangs in **R**-Modus abgleichen. | | | | | |

# ■ INSTRUCTIONS D'ALIGNMENT — FRANÇAIS

**Notes:**

1. Sélecteur de gamme ..... { AM (Alignement AM) / FM (Alignement FM)
2. Commutateur de silencieux/mode. . . off/mono
3. Conservel la tension du secteur à la tension nominale.
4. Antenne fictive FM 300Ω.
5. Le signal du générateur ne doit pas être plus élevé qu'il n'est nécessaire à obtenir une lecture en sortie.
6. Régler la position de la bobine (L201) de l'antenne en utilisant un tournevis de telle sorte qu'alle soit environ à 25 degrés de la plaque arriére.
7. Fixer la plaque de base au châssis avant le réglage.

| | AM/FM GENERATEUR BRANCHEMENT | AM/FM GENERATEUR FREQUENCE | AIGUILLE SUR LE FREQUENCE | INDICATEUR (VOLTMETRE ELECTRONIQUE OSCILLOSCOPE OU DISTORSIONMETRE) | POINTS DE REGLAGE | OBSERVATIONS |
|---|---|---|---|---|---|---|
| | | | **ALIGNEMENT AM** | | | |
| 1 | Côté chaud à travers 0.001μF, sur le trimmer de l'antenne AM. commum an shássis. | 450kHz (modulé à 30% par 400Hz) | Point sans signal | C.A. voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil. | T201 (1 transfo FI)<br>T202 (2 transfo FI) | Réglez au maximum de signal de sortie. |
| 2 | Faire une boucle de quelgues tours et rayonner le signal dans le cadre du l'ampli-tuner. | 600kHz (modulé à 30% par 400Hz) | 600kHz | C.A. voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil. | L202 (bobine OSC)<br>L201 (bobine ANT) | Réglez au maximum de signal de sortie. Régler le noyau ferrite de L201 à l'aide d'un tournevis. |
| 3 | Faire une boucle de quelgues tours et rayonner le signal dans le cadre du l'ampli-tuner. | 1500kHz (modulé à 30% par 400Hz) | 1500kHz | C.A. voltmètre électronique ou oscilloscope sur prise de sortie de l'appareil. | CT5 (trimmer OSC)<br>CT4 (trimmer ANT) | Réglez au maximum de signal de sortie.<br>Recommencez les étapes (2) et (3). |

| | AM/FM GENERATEUR | | AIGUILLE SUR LE FREQUENCE | INDICATEUR (VOLT-METRE ELECTRONIQUE OSCILLOSCOPE OU DISTORSIONMETRE) | POINTS DE REGLAGE | OBSERVATIONS |
|---|---|---|---|---|---|---|
| | BRANCHEMENT | FREQUENCE | | | | |
| | **ALIGNEMENT FI-FM** | | | | | |
| 4 | | Sans signal | Point sans signal | Brancher le voltmètre électronique à C.C. aux bornes TP102 et TP103. (Fig. 15) | T101 (transfo FI discri) A | 1. Commutateur de silencieux sur "on/auto".<br>2. Régler le noyau T101 (A) de telle sorte que le voltage mesuré dans le mode sans signal, soti de 0V dans la gamme des 300mV. |
| | **ALIGNEMENT RF-FM** | | | | | |
| 5 | Branchez sur la prise d'antenne FM à traves une antenne fictive FM. | 90MHz (modulè à 100% par 400Hz) | 90MHz | Oscilloscope sur prise de sortie du tuner | L5 (bobine OSC)<br>L3 (1er détecteur)<br>L1 (bobine ANT) | 1. Appliquer une entrée faible de telle sorte que le parasite soit compris dans la forme de l'onde de sortie.<br>2. Faire le réglage de telle sorte que le forme de l'onde de sortie soit verticalement symértrique. (Voir fig. 16)<br>3. Refaire les réglages (5) et (6) jusqu' à ce que la fréquence corresponde correctement avec l'échells du cadran. |
| 6 | Branchez sur la prise d'antenne FM à travers une antenne fictive FM. | 106MHz (modulé à 100% par 400Hz) | 106MHz | Oscilloscope sur prise de sortie du tuner. | CT3 (trimmer OSC)<br>CT2 (trimmer DET)<br>CT1 (trimmer ANT) | |
| | **REGLAGE DE LA DISTORSION FM EN MONO** | | | | | |
| 7 | Branchez sur la prise d'antenne FM à travers une antenne fictive FM. | 100MHz (modulé à 100% par 400Hz) | 100MHz | Distorsiomètre sur prise de sortie du tuner. | T102 (Transfo FI discri.) B | 1. Placer la commutateur Sourdine FM/Mode sur "on/auto" et vérifier l'étape (4) dans un mode sans signal.<br>2. S'il est déplacé, re-régler A (côté primaire) de T101.<br>3. Régler le noyou T102 (B) de telle sorte que la distorsion des canaux droit et gauche soit la plus faible. |
| | **ABGLEICHEN DES SIGNLMETER-LED (LICHTERZEUGENDE DIODE)-ANZEIGERS** | | | | | |
| 8 | Branchez sur la prise d'antenne FM à traves une antenne fictive FM. | 100MHz (modulé à 100% par 400Hz) | 100MHz | Oscilloscope sur prise de sortie du tuner. | VR102 | 1. Après avoir appliqué un faible signal d'entrée (bruit produit) de 100 MHz (100% modulé à 400Hz), accorder de telle sorte queles formes d'onde supérieure et inférieure soient symmet-riques.<br>2. Après avoir réglé l'entrée sur 45dB (oscilloscope à 57dB), régler la VR102 de telle sorte que toutes les LED de puissance de signal, s'allument. |
| 9 | Branchez sur la prise d'antenne FM à travers une antenne fictive FM. Niveau de sortie du générateur 16dB. | 100MHz (modulé à 100% par 400Hz) | 100MHz | Branchez un voltmètre électronique ou un oscilloscope sur les bornes de haut-parleur de l'ampli-tuner. | VR101 | 1. Commutateur de silencieux sur "ON"<br>2. Régler pour obtenir une lecture en sortie. |

**ALIGNEMENT DU PILOTE MULTIPLEX FM**

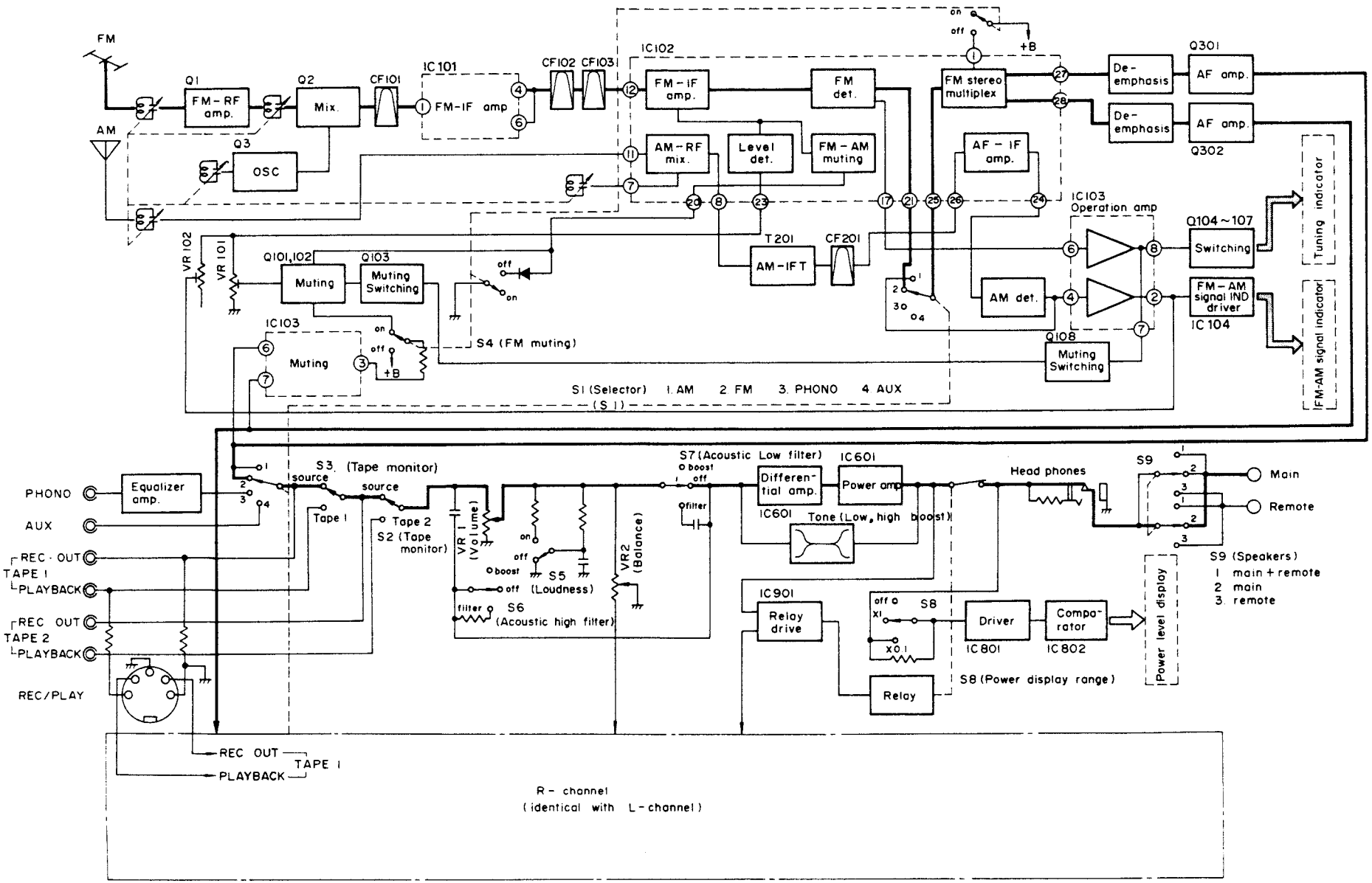
| | Avec un fréquencemétre | Par un outre système |
|---|---|---|
| 10 | 1. Signal mono 100MHz non modulé appliqué à l'appariel.<br>2. Commutateur de silencieux sur "on/auto".<br>3. Branchez le fréquencemètre sur **TP301** à travers une résistance de 100kΩ.<br>4. Régler **VR301** sur 19kHz ± 30Hz. | 1. Appliquez à l'appareil un sinal stéréo provenant d'un générateur ou de la réception d'un émetteur.<br>2. Régler **VR301** jusqu à ce que l'indicateur de stéréophonic s'allume.<br>Collez le curseur de **VR301** comme indiqué sur la fig. 17. |

**REGLAGE DE LA SEPARATION DES CANAUX**

| | Préparations | Procédure de réglage |
|---|---|---|
| 11 | 1. Ajouter 100MHz, 1kHz, Modulation, pilote 10%, signal stéréophonique 60dB, à làpparell.<br>2. Brancher un voltmètre électronique C.A. ou un oscilloscope aux bornes de sortie, par l'intermédiaire du filtre passe-bas (fc = 15 ~ 19kHz). | 1. Commutateur de silencieux fur "on/auto".<br>2. Régler **VR302** de telle sorte que la sortie droite soit minimale quand la commande d'accord stéréophonique est dans le mode gauche (modulation du canal gauche) et que la sortie gauche soit minimale dans mode droit. |

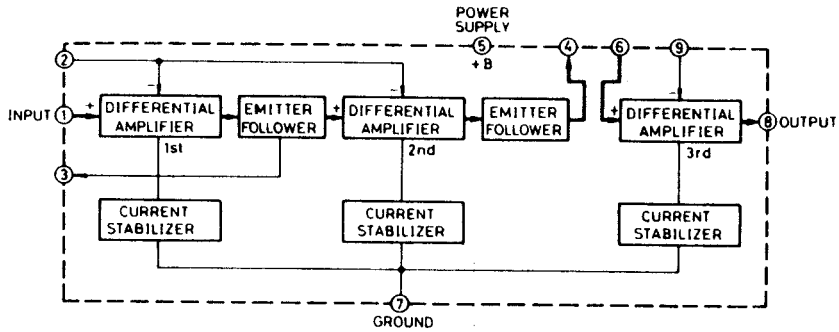
# SA-404

## ■ BLOCK DIAGRAM

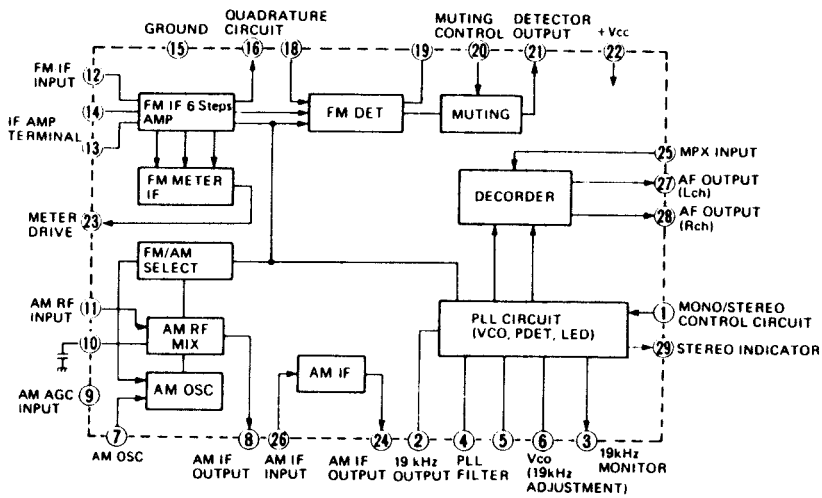


## ■ BLOCK DIAGRAM OF IC'S

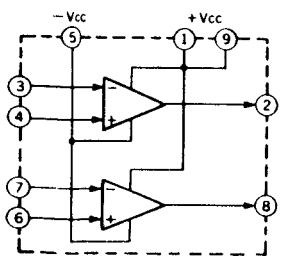
* This is the basic block diagram of the inside circuit of IC. In an actual circuit, there may be sometimes idle terminals or some different functions other than the basic circuit.



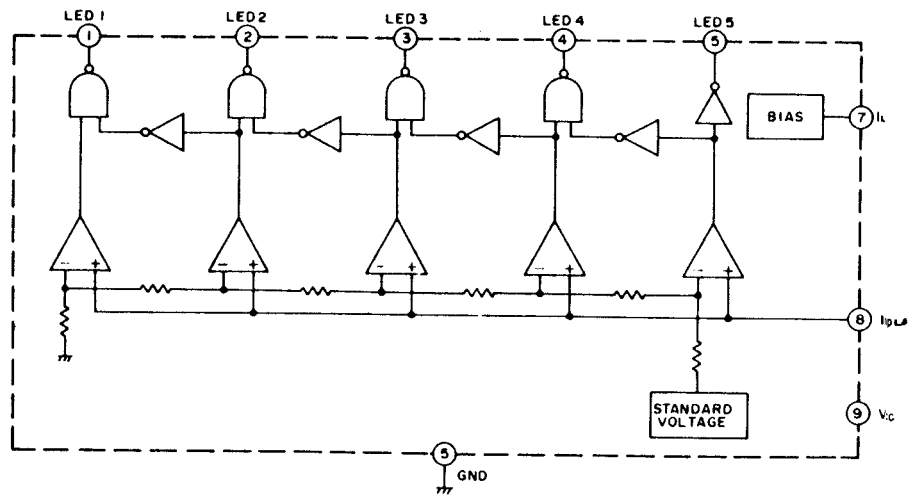

**IC101 (AN278)**
**FM IF amplifier**



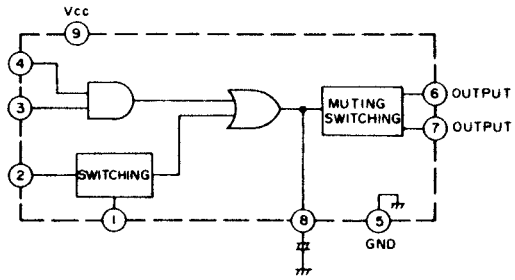

**IC102 (AN7001SW)**
**AM converter, FM IF amplifier**
**FM detector & stereo decoder**
**(MPX)**



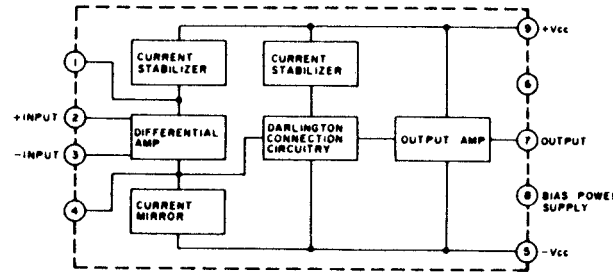

**IC103, 801 (AN6551)**
**Operation amplifier**



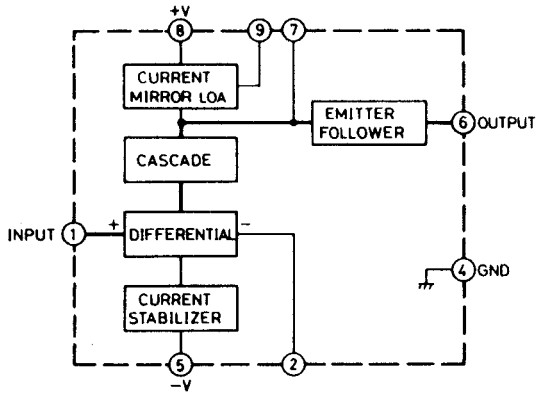

**IC104 (AN6876)**
**FM AM signal indicator driver**



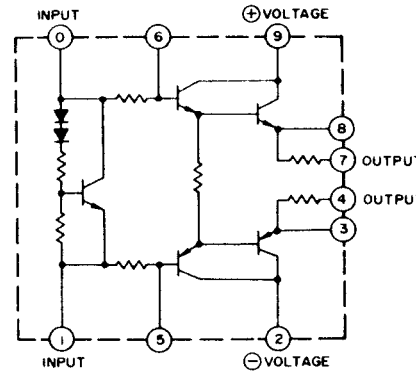

**IC301 (AN6136)**
**AF muting**



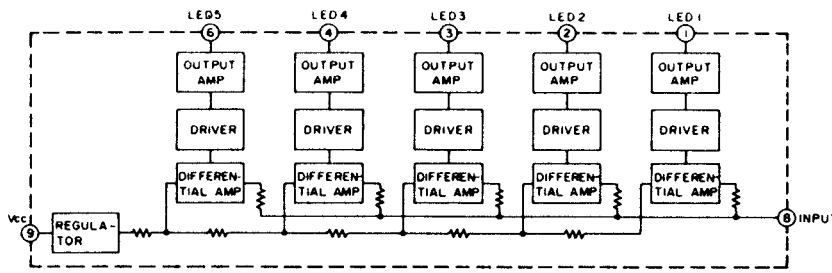

**IC401, 402 (SVITA7322P)**
**Equalizer amplifier**



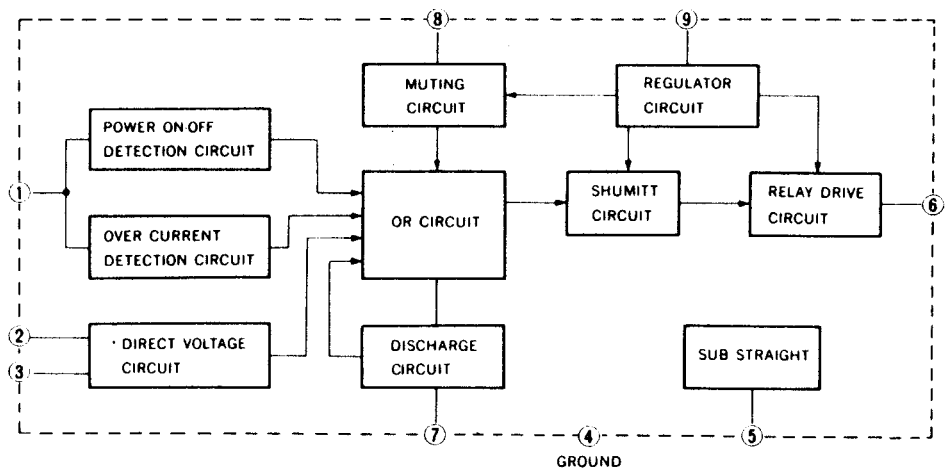

**IC601, 602 (AN7060F)**
**Differential amplifier**




**IC603, 604 (SVISTK1050K)**
**Power amplifier**




**IC802, 803 (AN6875)**
**LED comparator**

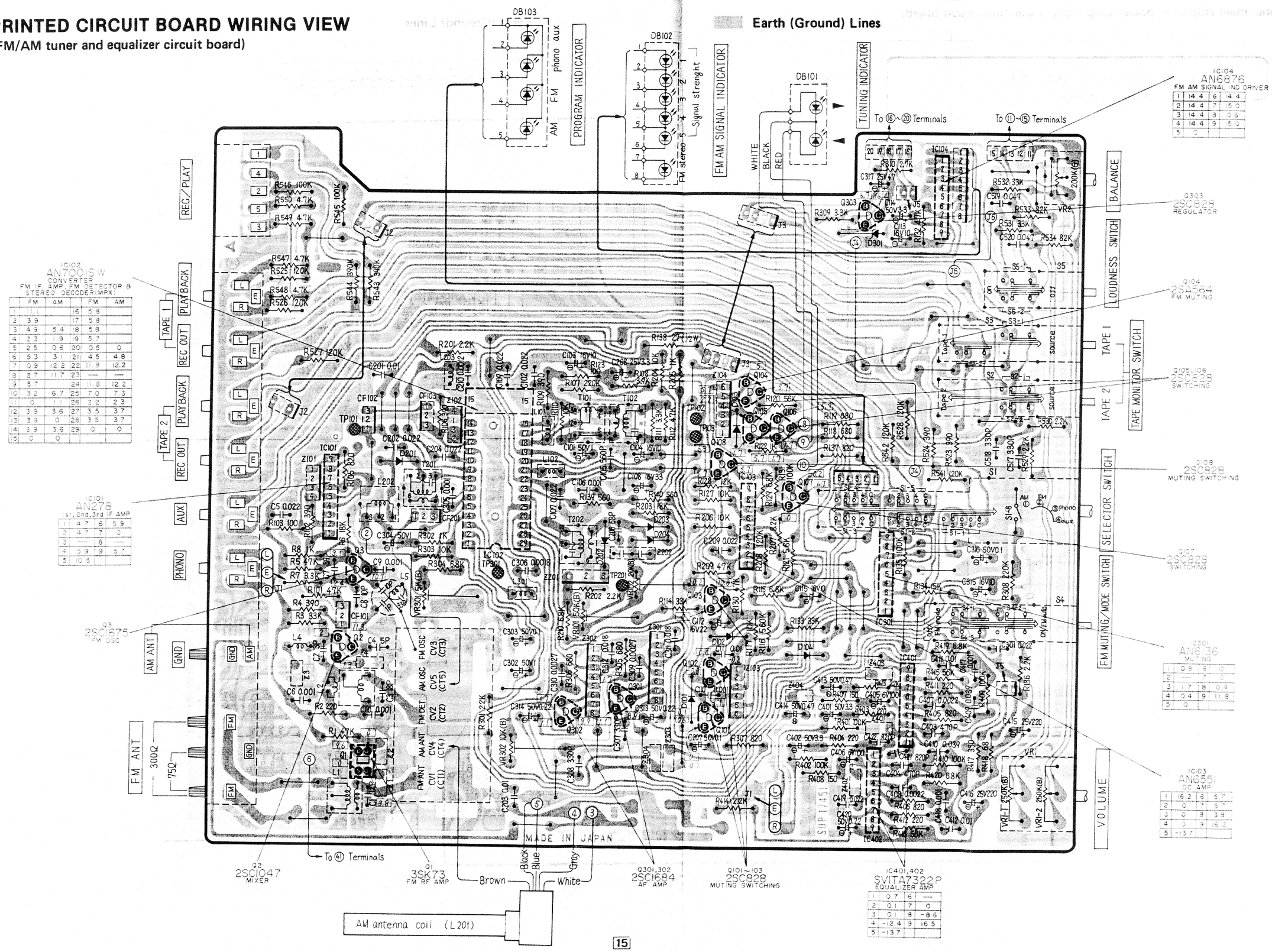



**IC901 (SVITA7317P)**
**Speaker protection operation amplifier**

## ■ PRINTED CIRCUIT BOARD WIRING VIEW

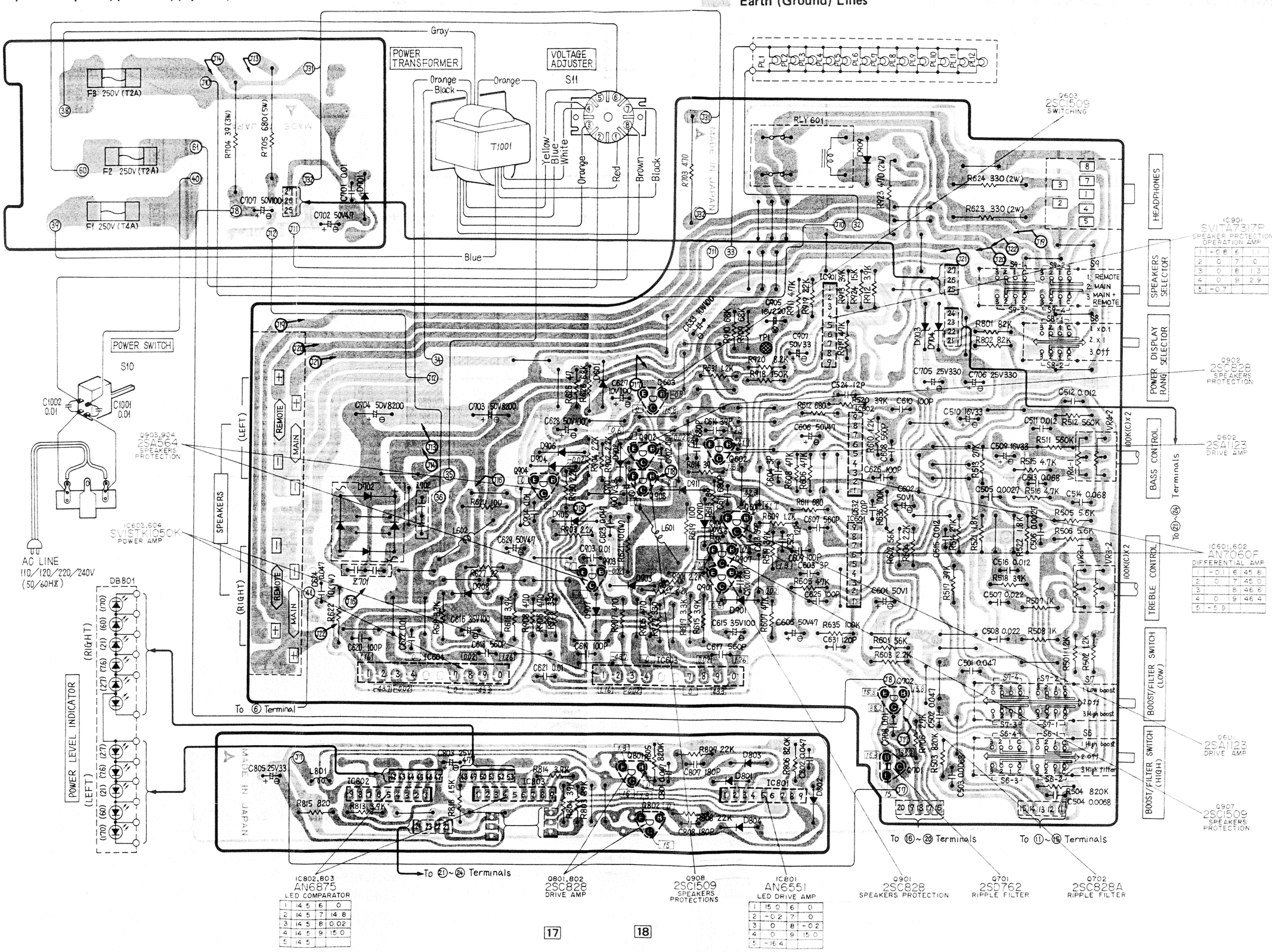
(FM/AM tuner and equalizer circuit board)

Earth (Ground) Lines



## ■ PRINTED CIRCUIT BOARD WIRING VIEW

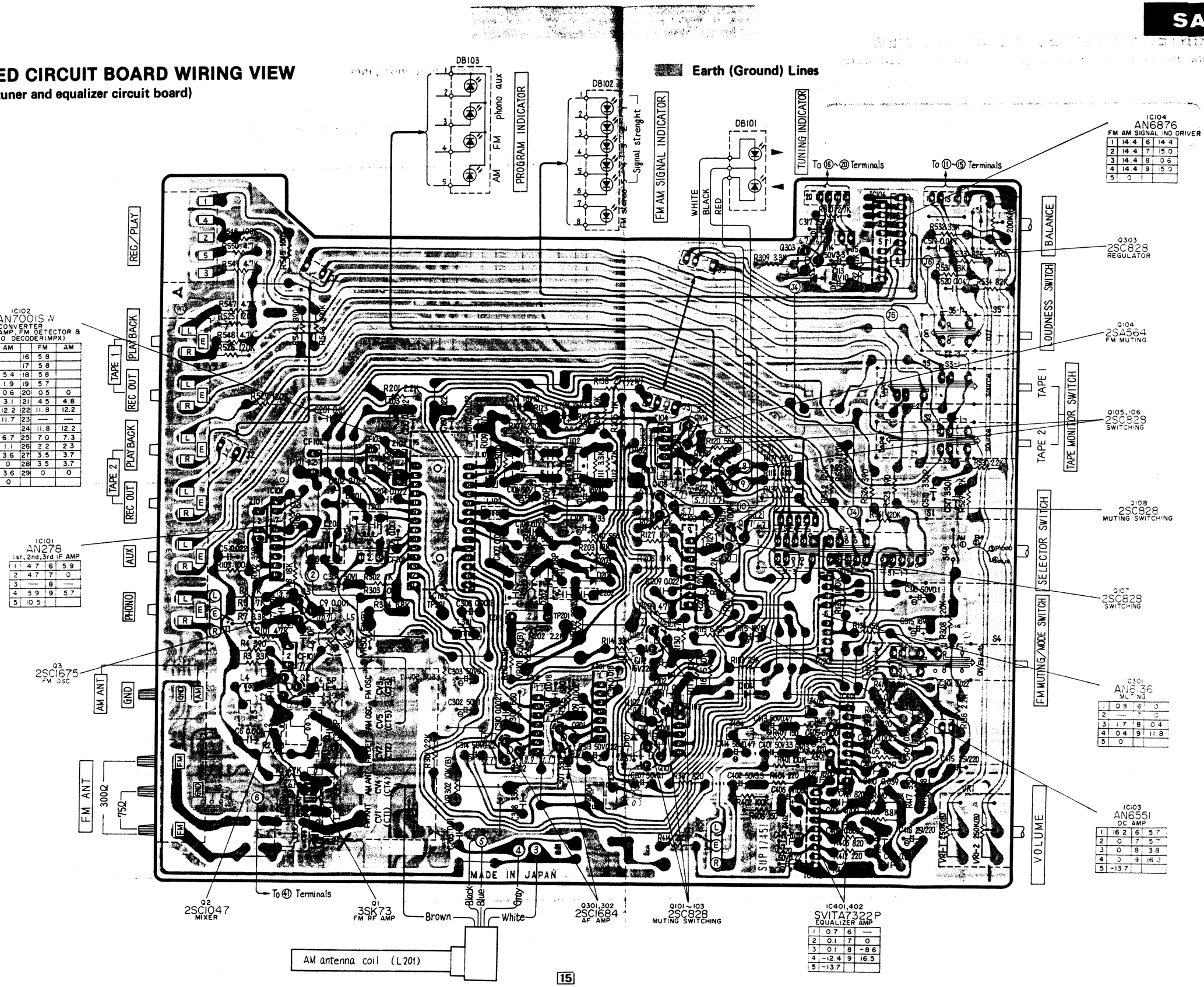
(Tone, main amplifier, power supply and protection circuit board)



## ■ PRINTED CIRCUIT BOARD WIRING VIEW

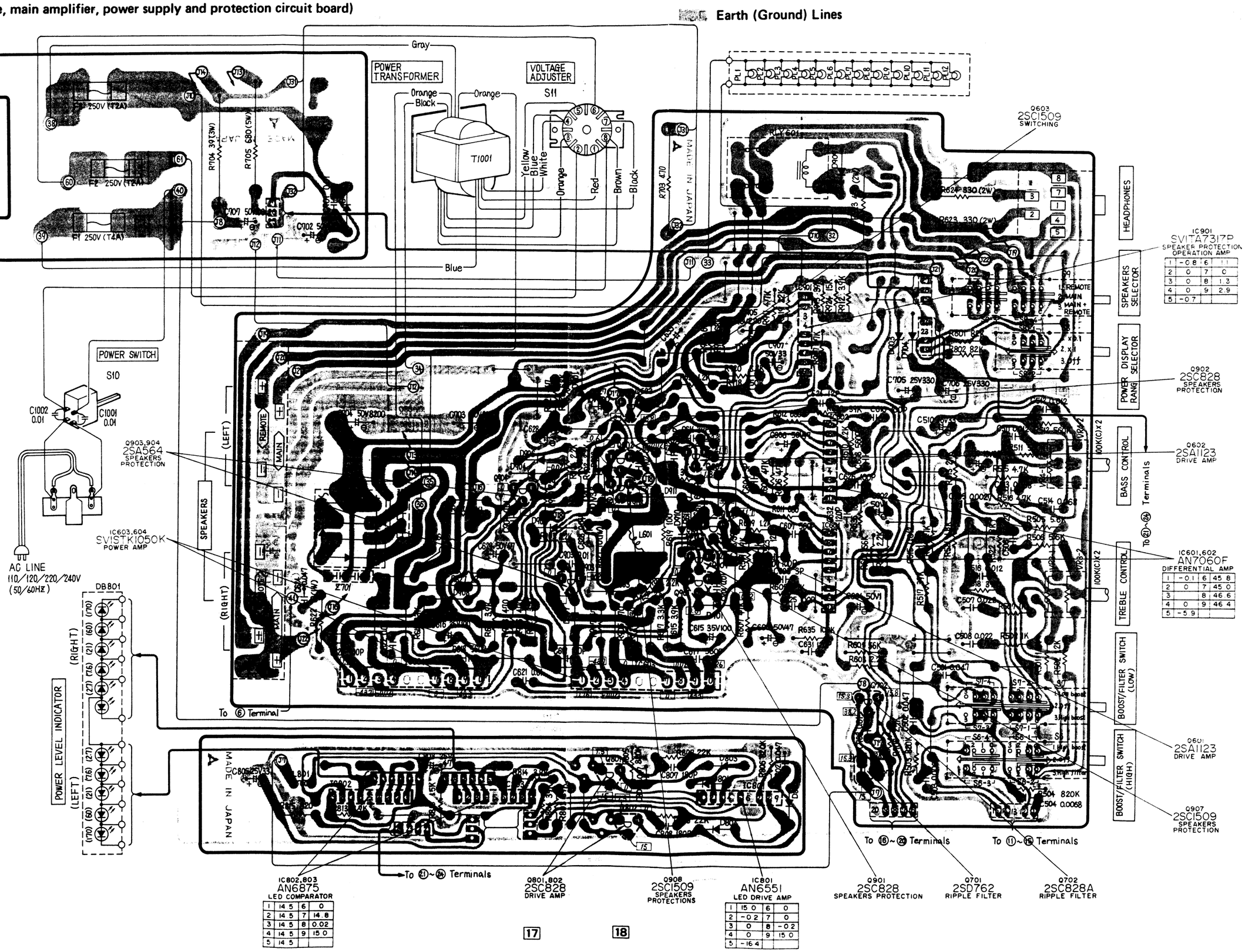
**(FM/AM tuner and equalizer circuit board)**

**Earth (Ground) Lines**



## ■ PRINTED CIRCUIT BOARD WIRING VIEW

**(Tone, main amplifier, power supply and protection circuit board)**



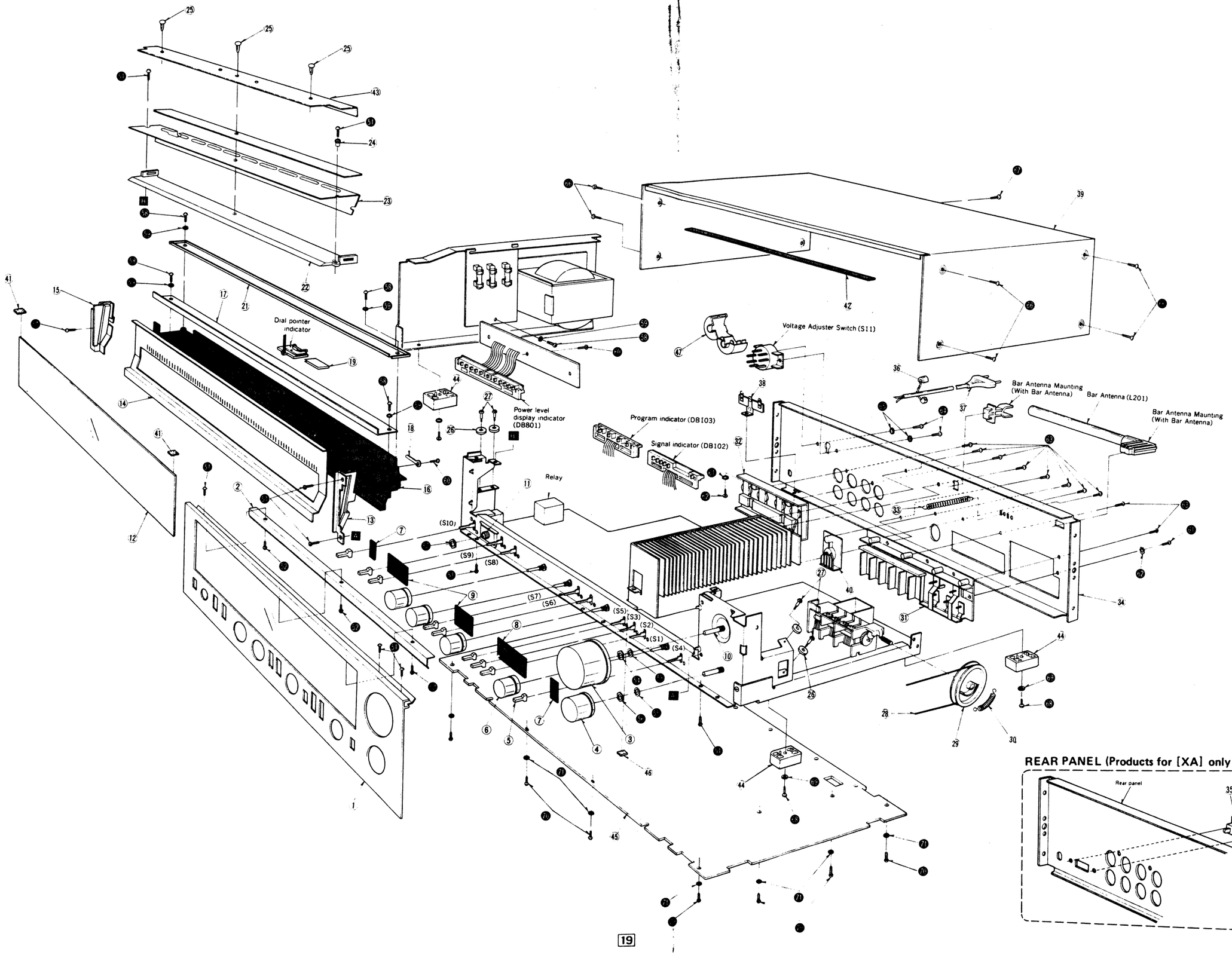

| | | | | |
|---|---|---|---|---|
| 1 | -0.8 | 6 | 11 |
| 2 | 0 | 7 | 0 |
| 3 | 0 | 8 | 1.3 |
| 4 | 0 | 9 | 2.9 |
| 5 | -0.7 | | |

| | | | |
|---|---|---|---|
| 1 | -0.1 | 6 | 45.8 |
| 2 | 0 | 7 | 45.0 |
| 3 | | 8 | 46.6 |
| 4 | 0 | 9 | 46.4 |
| 5 | -5.9 | | |

| | | | |
|---|---|---|---|
| 1 | 14.5 | 6 | 0 |
| 2 | 14.5 | 7 | 14.8 |
| 3 | 14.5 | 8 | 0.02 |
| 4 | 14.5 | 9 | 15.0 |
| 5 | 14.5 | | |

| | | | |
|---|---|---|---|
| 1 | 15.0 | 6 | 0 |
| 2 | -0.2 | 7 | 0 |
| 3 | 0 | 8 | -0.2 |
| 4 | 0 | 9 | 15.0 |
| 5 | -16.4 | | |

## ■ EXPLODED VIEW

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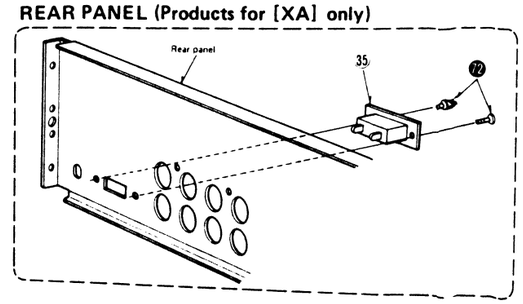
**REAR PANEL (Products for [XA] only)**

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# ■ REPLACEMENT PARTS LIST...Cabinet, Chassis and Packing Parts

**NOTES:** 1. Part numbers are indicated on most mechanical parts Please ust this part number of rparts orders.
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.
3. ■K marked parts are used for black type only, while O-marked parts are for silver type only.
4. Parts other than ■K -and O-marked are used for both black and silver types.
5. Bracketed indications in Ref. No. columns specify the area. Parts without these indications can be used for all areas.

| Ref. No. | | Part No. | Part Name &Description |
|---|---|---|---|
| **CABINET and CHASSIS PARTS** | | | |
| 1 | O | SGWA404D | Panel, Front Ass'y |
| 1 | ■K | SGWA404KD | Panel, Front Ass'y (Black) |
| 2 | O | SDH493 | Bracket, Front Panel |
| 2 | ■K | SDH493–1 | Bracket, Front Panel (Black) |
| 3 | O | SBN879–1 | Knob, Tuning |
| 3 | ■K | SBN879–2 | Knob, Tuning (Black) |
| 4 | O | SBN883–1 | Knob, Volume |
| 4 | ■K | SBN883–2 | Knob, Volume (Black) |
| 5 | O | SBD29 | Knob, Lever Switch |
| 5 | ■K | SBD29–1 | Knob, Lever Switch (Black) |
| 6 | O | SBN887–1 | Knob, Selector, Balance, Treble and Bass |
| 6 | ■K | SBN887–2 | Knob, Selector, Balance, Treble and Bass (Black) |
| 7 | | SHS2425 | Fiber, Lever Switch |
| 8 | | SHS2429 | Fiber, Lever Switch |
| 9 | | SHS2427 | Fiber, Lever Switch |
| 10 | | SDT8061 | Shaft, Tuning |
| 11 | | XCJ6P21E–A | Jack, Headphones |
| 12 | O | SKD3810 | Plate, Dial |
| 12 | ■K | SKD3811 | Plate, Dial (Black) |
| 13 | O | SGX6753 | Escutcheon, Dial Scale (Right) |
| 13 | ■K | SGX6753–1 | Escutcheon, Dial Scale (Right), (Black) |
| 14 | O | SDH495–1 | Dial Scale |
| 14 | ■K | SDH495–3 | Dial Scale (Black) |
| 15 | O | SGX6755 | Escutcheon, Dial Scale (Left) |
| 15 | ■K | SGX6755–1 | Escutcheon, Dial Scale (Left), (Black) |
| 16 | | SGX6751 | Escuteheon, Dial Scale |
| 17 | | SUG71 | Mirror, Dial Scale |
| 18 | | SXE513–1 | Terminal, Lead Wire |
| 19 | | SDA83 | Paper, Pointer Slide |
| 21 | | SUV457 | Bracket, Dial Pointer Cover |
| 22 | | SDL25 | Reflector Plate |
| 23 | | SHP9291 | Paper, Reflector |
| 24 | | SHR9339 | Spacer, Reflector Plate |
| 25 | | SHRA916–2 | Lock Pin, Dial Lamp Printed Circuit Board M'tg |
| 26 | | SDR3 | Pulley, Dial Cord |
| 27 | | SHD3X21F–1 | Screw, Pulley M'tg |
| 28 | | SDZ051–2 | Cord, Dial 180 cm (70-15/16) |
| 29 | | SDD47–1 | Drum, Variable Capacitor |
| 30 | | SDSA4121 | Spring, Dial Cord |
| 31 | | SJF8017 | Terminal, Input and Antenna |
| 32 | | SJF5811 | Terminal, Speakers |
| 33 | | SUS175 | Spring, Dial Pointer Cord |
| 34 [E] | | SGP2190B | Rear Panel |
| 34 [EG, XGF, XGH, EB, XE] | | SGPA404D | Rear Panel, SGP2190B with Name Plate (SGT21810) |
| 34 [XA] | | SGP2190–1B | Rear Panel |
| 34 [XAL] | | SGP2190–2B | Rear Panel |
| 35 [XA] only | ⚠ | SJS9205–1 | Socket, AC Outlet |
| 36 [E, EG, XGF, XGH, EB, XA] | | SFSR4N4 | Bushing, AC Cord (Product Part No.SHR127) |
| 36 [XE] | | SFSR5N4 | Bushing, AC Cord (Product Part No.SHR129) |
| 36 [XAL] | | SHR131 | Bushing, AC Cord |
| 37 [E, EG, XGF, XGH, EB] | ⚠ | RJA23ZC | AC Cord, Power Source |
| 37 [XE] | ⚠ | RJA45ZC | AC Cord, Power Source |
| 37 [XAL] | ⚠ | QFC1207M | AC Cord, Power Source |
| 37 [XA] | ⚠ | SJA111 | AC Cord, Power Source |
| 38 | | SJR205 | Terminal Strip, 2P (Except product for [XA]) |
| 39 [Other Arers] | O | SKC290H | Cabinet |
| 39 [Other Arers] | ■K | SKC290B | Cabinet (Black) |
| 39 [XE] only | O | SYK909 | Cabinet |
| 40 | | SJS6511 | Socket, DIN (REC/PLAY) |
| 41 | | SHG1509 | Cushion, Dial Plate |
| 42 | | SHS6101–1 | Fiber, Cabinet |
| 43 | | SHP9313 | Paper, Reflector Plate |
| 44 | | SKL237 | Foot, Set |
| 45 | | SYU211–1 | Bottom Board |
| 46 | | SHG6093 | Fiber, Transistor M'tg |
| 47 | | SUV453 | Cover, Voltage Adjuster |
| **SCREWS WASHER and NUTS** | | | |
| ● | | **XTB3+10BFN** | Screw, Tapping, ⊕ 3 x 10 |
| ● | | **XTB3+6BFN** | Screw, Tapping, ⊕ 3 x 6 |
| ● | | **XWV11** | Washer, Spring, ø11 |
| ● | | **XNS11** | Nut, M11 |
| ● | | **XWV8** | Washer, Spring ø8 |
| ● | | **XNS8** | Nut, M8 |
| ● | | **XNS12** | Nut, M12 |
| ● | | **XTV3+10BFN** | Screw, Tapping, ⊕ 3 x 10 |
| ● | | **XWG3** | Washer, Plain, ø3 |
| ● | | **XTB3+12BFZ** | Screw, Tapping, ⊕ 3 x 12 |
| ● | | **XTB3+8BFZ** | Screw, Tapping, ⊕ 3 x 8 |
| ● | | **XWC3B** | Washer, Toothed, ø3 |
| ● | | **XTB3+10BFZ** | Screw, Tapping, ⊕ 3 x 10 |
| ● | | **XSC3+6BVS** | Screw, ⊕ 3 x 6 |
| ● | | **XWA3BFZ** | Washer, Spring ø3 |
| ● | O | **XTB4+8BFN** | Screw, Tapping, ⊕ 4 x 8 |
| ● | ■K | **XTB4+8BFZ** | Screw, Tapping, ⊕ 4 x 8 (Black) |
| ● | O | **XTB3+8BFN** | Screw, Tapping, ⊕ 3 x 8 |
| ● | ■K | **XTB3+8BFZ** | Screw, Tapping, ⊕ 3 x 8 (Black) |
| ● | | **XTV3+10BFN** | Screw, Tapping, ⊕ 3 x 10 |
| ● | | **XWG3** | Washer, Plain, ø3 |
| ● | | **XTV3+12BFN** | Screw, Tapping, ⊕ 3 x 12 |
| ● | | **XWG3** | Washer, Plain ø3 |
| ● [XA] only | | **XTN3+8BFZ** | Screw, Tapping ⊕ 3 x 8 |
| **ACCESSORIES** | | | |
| A1 | | SSA267 | Cord, FM Indoor Antenna |
| A2 [XA] only | | SJP5213-1 | Plug Adapter, AC Power |
| A3 [XA] only | | SJP5215 | Plug Adapter, AC Power |
| **PACKING PARTS** | | | |
| P1 | | SPP651 | Polyethylene Bag |
| P2 [Other Arers] | | SPS2531 | Pad, Left Side |
| P2 [XAL] only | | SPS2531-1 | Pad, Left Side |
| P3 [Other Arers] | | SPS2533 | Pad, Right Side |
| P3 [XAL] only | | SPS2533-1 | Pad, Right Side |
| P4 [Other Arers] | | SPG2375 | Carton Box |
| P4 [XGF] only | | SPG2377 | Carton Box |
| P4 [XAL] only | | SPG2381 | Carton Box |
| P5 | | SQF10291 | Instructions Book, Printed Matter |

# ■ REPLACEMENT PARTS LIST ..... Electrical Parts

| Ref. No. | | Part No. | Part Name & Description |
|---|---|---|---|
| **INTEGRTED CIRCUITS** | | | |
| IC101 | | AN278 | IC, FM IF Amplifier |
| IC102 | | AN7001SW | IC, AM Converter, FM IF Amplifier, FM Detector & Stereo Decoder (MPX) |
| IC103 | | AN6551 | IC, Operation Amplifier |
| IC104 | | AN6876 | IC, FM AM Signal Indicator Driver |
| IC301 | | AN6136 | IC, AF Muting |
| IC401, 402 | | SVITA7322P | IC, Equalizer Amplifier |
| IC601, 602 | | AN7060F | IC, Tone Amplifier |
| IC603, 604 | | SVISTK1050K | IC, Power Amplifier |
| IC801 | | AN6551 | IC, LED Driver Amplifier |
| IC802, 803 | | AN6875 | IC, LED Comparator |
| IC901 | | SVITA7317P | IC, Speaker protection Operation Amplifier |
| **TRANSISTORS** | | | |
| Q1 | | 3SK73–GR | Transistor, FM-RF Amplifier |
| Q2 | | 2SC1047–D | Transistor, FM Mixer |
| Q3 | | 2SC1675–L1 | Transistor, FM Oscillator |
| Q101, 102, 103 105, 106, 107 108, 303 | | **2SC1328–T** | Transistor, Muting Switching & Regulator |
| Q104 | | **2SA666A1–R** | Transistor, FM Tuning |
| Q301, 302 | | 2SC1684–R | Transistor, AF Amplifier (Use in ranks S or T) |
| Q601, 602 | | 2SA1123–R | Transistor, Pre Drive Amplifier (Use in ranks S, T or R) |
| Q603 | | 2SC1509F–R | Transistor, Switching |
| Q701 | | 2SD762–O | Transistor, Ripple Filter (Use in ranks O or P) |
| Q702 | | **2SC1328–T** | Transistor, Ripple Filter |
| Q801, 802 | | **2SC1328–T** | Transistor, Buffer |
| Q901, 902 | | **2SC1328–T** | Transistor, Power Drive |
| Q903, 904 | | **2SA666AI–R** | Transistor, Power Drive |
| Q907, 908 | | 2SC1509F–R | Transistor, Speakers Protection |
| **DIODES** | | | |
| D101, 202 | | **2-0A99** | Diode, Switching & AM Detector |
| D102, 103, 104 201, 203, 204 | | **MA162A** | Diode, Detector, Bias, & A, G, C |
| D301, 601 | | SVDMZ306B | Diode, 6V Zener |
| D701, 909 | | **SVDSR1K2** | Diode, Bias |
| D702 | ⚠ | SVDS5VB20F | Rectifier |
| D703, 704 | | MA2180B | Diode, 8V Zener |
| D801, 802, 803 804, 901, 902 907, 908 | | **MA162A** | Diode, Detector |
| D903, 904 , 905 906, 910, 911 | | **MA162A** | Diode, Bias |
| **COILS and TRANSFORMERS** | | | |
| L1 | | SLA4N15 | Coil, FM Antenna |
| L2 | | **RLQY25S2** | Coil, Choke |
| L3 | | SLD4P13 | Coil, FM RF Detector |
| L4 | | RLQY15G5–Y | Coil, Choke |
| L5 | | SLO4P63–P | Coil, FM Oscillator |
| L101 | | SLQX180–2 | Coil, Choke |
| L102 | | SLQX471–M | Coil, Choke |
| L201 | | SLF2D63 | Coil, AM Antenna |
| L202 | | SLO2C15 | Coil, AM Oscillator |
| L203 | | SLQX101–3M | Coil, Choke |
| L301 | | SLQX393–1Z | Coil, Choke |
| L601, 602 | | SLQY15G–3P | Coil, Choke |
| L801 | | SLQX101–3M | Coil, Choke |
| T101 | | SLI4C515 | Transformer, FM IF |
| T102 | | SLI4C517 | Transformer, Discriminator |
| T201 | | SLI2C129R–M | Transformer, AM IF |
| T202 | | SLI2C413R | Transformer, AM IF |
| T1001 [Other Arers] | ⚠ | SLT5P171–W | Transformer, Power Source |
| T1001 [XAL] only | ⚠ | SLT5P175–W | Transformer, Power Source |
| **CERAMIC FILTERS** | | | |
| CF101, 102, 103 | | SVFE107MM–A | Ceramic Filter, 10.70 MHz (Red) |
| | | SVFE107MM–B | Ceramic Filter, 10.68MHz (Blue) |
| | | SVFE107MM–C | Ceramic Filetr, 10.72 MHz (Orange) |
| | | SVFE107MM–D | Ceramic Filter, 10.66 MHz (Brown) |
| | | SVFE107MM–E | Ceramic Filter, 10.74 MHz (Grey) |
| | | (Use pair ranks as same as CF101, 102 and 103) | |
| CF201 [Other Arers] | | SVFSFU450B3 | Ceramic Filter, AM 457 kHz |
| CF201 [XE] only | | SVFSFU468B | Ceramic Filter, AM 475kHz |
| **VARIABLE RESISTORS** | | | |
| VR1 | | EWF2F25BF5S | Volume Control, 250kΩ(B) |
| VR2 | | EVH64F25G25S | Balance Control, 200kΩ(W) |
| VR3 | | EWK33F25C15S | Treble Control, 100kΩ(C) |
| VR4 | | EWK34F25C15S | Bass Control, 100kΩ(C) |
| VR101 | | **EVLS3AA00B54** | Muting Level Adjustment, 50kΩ(B) |
| VR102 | | **EVLS3AA00B24** | Signal Level Adjustment, 20kΩ(B) |
| VR301 | | EVTS3MA00B53 | FM MPX VCO Adjustment, 5kΩ(B) |
| VR302 | | **EVLS3AA00B14** | Separation Adjustment, 10kΩ(B) |
| **COMPONENT COMBINATIONS** | | | |
| Z1 | | EXRP220K104C | Component Combination, 100kΩ & 22pF |
| Z2 | | EXRP102Z223C | Component Combination, 220kΩ & 0.001μF |
| Z3 | | EXRP181K682C | Component Combination, 6.8kΩ & 180pF |
| Z4 | | EXRP103P102C | Component Combination, 1kΩ & 0.01 μF |
| Z101, 102 | | EXF3YL01C | Component Combination, 0.01 μF (X3) |
| Z103 | | EXBH85071K | Component Combination, 70Ω (X5) |
| Z104 | | EXBH84072K | Component Combination, 7kΩ (X4) |
| Z201 | | EXRF203Z471S | Component Combination, 470Ω & 0.02μF |
| Z202 | | EXRFS203ZS | Component Combination, 0.01μF (X2) |
| Z301, 302 | | EXBH85063K | Component Combination, 6kΩ (X5) |
| Z303, 304 | | EXRP182K104C | Component Combination, 100kΩ & 0.0018μF |
| Z401, 402 | | EXRP121K823C | Component Combination, 82kΩ & 120pF |
| Z403, 404 | | EXRP122K104C | Component Combination, 100kΩ & 0.0012μF |
| Z701, 702 | | EXRFS203ZS | Component Combination, 0.01μF (X2) |
| **VARIABLE CAPACITORS** | | | |
| CV1~CV5 (CT1~CT5) | | ECVC751K144B | Variable Capacitor, with Trimmer |
| **FUSES** | | | |
| F1 | ⚠ | XBA2C40TR0 | Fuse, T4A (250V) Power Source |
| F2 | ⚠ | XBA2C20TR0 | Fuse, T2A (250V), Power Source |
| F3 | ⚠ | XBA2C20TR0 | Fuse, T2A (250V), Power Source |
| **SWITCHES** | | | |
| S1 | | SSR149 | Switch, Selector |
| S2,3 | | SSL153 | Switch, Tape Monitor & Rec Mode |
| S4 | | SSL155 | Switch, FM Muting |
| S5 | | SSL149 | Switch, Loudness |
| S6, 7 | | SSL159 | Switch, Acoustic High & Acoustic Low |
| S8 | | SSL151 | Switch, Power Display Range Selector |
| S9 | | SSL163 | Switch, Speaker |
| S10 | ⚠ | ESL21210S | Switch, Power Source |
| S11 | ⚠ | ESE37200 | Switch, Voltage Adjuster |
| **LAMPS** | | | |
| PL1~12 | ⚠ | XAMR68S8 | Lamp Dial, 80mA (8V) |
| **INDICATORS** | | | |
| DB101 | | SWV13 | Indicator, Dial Pointer |
| DB102 | | LN06126P–1 | Indicator, Signal |
| DB103 | | LN04427P | Indicator, Program |
| DB801 | | LN11124P–1 | Indicator, Power Level Display |
| **RELAY** | | | |
| RLY601 | ⚠ | SSY69 | Relay, Speaker Protection |

**NOTES:**
- [E] and [EG] are available in Scandinavia and European.
- [XGF] is available in France.
- [XGH] is available in Holland.
- [EB] is available in Belgium.
- [XE] is available in United Kingdom.
- [XA] is available in Asia, Latin America, Middle East and Africa.
- [XAL] is available in Australia.

## ■ SCHEMATIC DIAGRAM ..... MODEL SA-404

(This schematic diagram may be modified at any time with the development of new techno

1 2 3 4 5 6 7

A B C D E F G H I

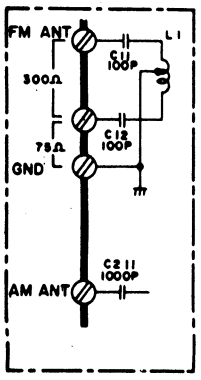
FM ANT
300Ω
75Ω
GND
AM ANT

Q1 3SK73 FM RF AMP
Q2 2SC1047 MIXER
Q3 2SC1675 FM OSC
D201 MA150
Q301, 302 2SC1684 AF AMP
D202 (Ge) 0A99
D203, 204 MA150 AGC
D101 (Ge) 0A99
D102 ~ 104 MA150
Q101 ~ 103 2SC828 MUTING SWITCHING

IC101 AN278 1st 2nd.3rd IF AMP
IC102 AN7001SW FM. AM. MPX
IC301 AN6136 MUTING
IC401 SVITA7322P EQUALIZER AMP
IC402 SVITA7322P EQUALIZER AMP

FM OSC
AM OSC
FM MPX VCO adj.
Separation adj.
Muting adj.
Signal level adj.
Volume
(XE)
● Product for United Kingdom [XE] only

■ ANTENNA CAPACITORS




● Product for Australia [XAL] only

(Lch) PHONO AUX REC OUT TAPE 1 PLAYBACK REC OUT TAPE 2 PLAYBACK
(Rch) PHONO AUX REC OUT TAPE 1 PLAYBACK REC OUT TAPE 2 PLAYBACK
DIN REC/PLAY

## ■ TERMINAL GUIDE OF TRANSISTOR AND IC

| AN278. AN6551 | SVITA7317P | AN6876, AN6136, AN7060F AN6875 | SVITA7322P | 3SK73 | 2SD762 | 2SA1123, 2SC828, 2SC1509, 2SA564, 2SC1047, 2SC1675, 2SC1684 | SVISTK1050K | AN7 |
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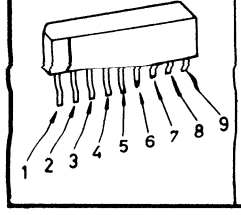
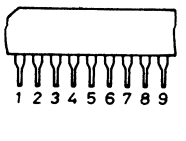
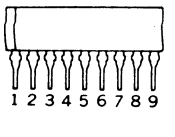
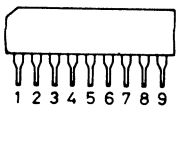
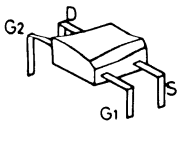
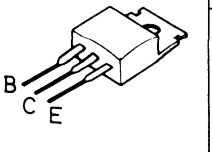
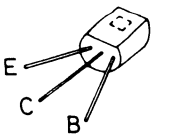
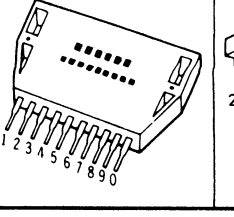
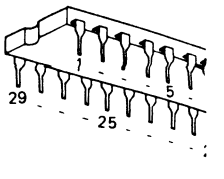
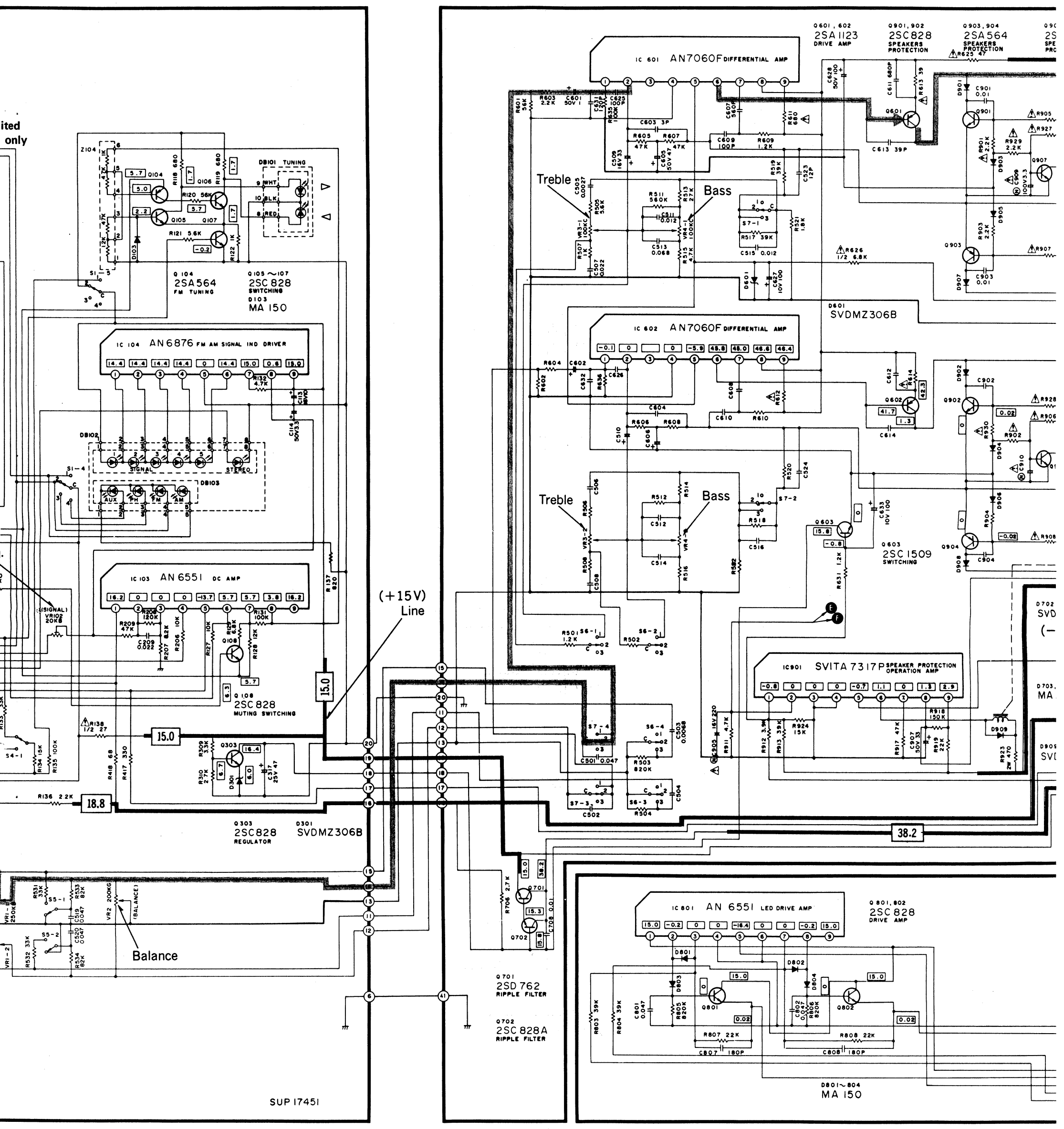
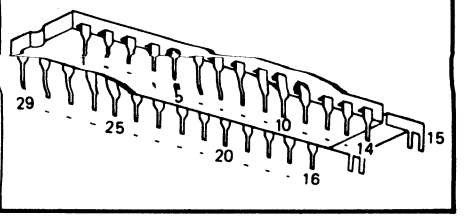
|  |  |  |  |  |  |  |  |  |

elopment of new technology.)

7 8 9 10 11 12 13 14


IC 104 AN6876 FM AM SIGNAL IND DRIVER
IC 103 AN 6551 DC AMP
IC 601 AN7060F DIFFERENTIAL AMP
IC 602 AN7060F DIFFERENTIAL AMP
IC901 SVITA 7317P SPEAKER PROTECTION OPERATION AMP
IC 801 AN 6551 LED DRIVE AMP
Q 104 2SA564 FM TUNING
Q 105 ~107 2SC 828 SWITCHING
D103 MA 150
Q 108 2SC 828 MUTING SWITCHING
Q303 2SC828 REGULATOR
D301 SVDMZ306B
Q601, 602 2SA 1123 DRIVE AMP
Q901, 902 2SC828 SPEAKERS PROTECTION
Q903, 904 2SA564 SPEAKERS PROTECTION
D601 SVDMZ306B
Q603 2SC 1509 SWITCHING
Q701 2SD 762 RIPPLE FILTER
Q702 2SC 828A RIPPLE FILTER
Q 801, 802 2SC 828 DRIVE AMP
D801~804 MA 150
DB101 TUNING
DB102
DB103
Treble
Bass
Balance
(+15V) Line
SUP 17451

| 50K | AN7001SW |
|---|---|
| |  |



**Shorting Switch**

This unit uses a shorting switch. As illustrated below, the circuit is shorted to the next circuit without being opened.

In the circuit diagram, the shaded area represents the common terminal.

Connect

Commo

14 15 16 17 18 19 20

A B C D E F G H J

Q903,904 2SA564 SPEAKERS PROTECTION
Q907,908 2SC1509 SPEAKERS PROTECTION
D901,902,907,908 MA150
D903~906,910,911 MA162A

SUP17431A

R623 47

(+43.3V) Line

IC 603,604 SVISTK1050K POWER AMP

IC 603

C901 0.01 · Q901 · R905 470 · R927 330 · R929 2.2K · R901 2.2K · D903 · C909 100V3.3 · Q907 · D910 · D905 · R903 2.2K · Q903 · R907 470 · C903 0.01 · D907 · R627 22 · C629 50V47 · D902 · C902 · R928 · R906 · R930 · R902 · D904 · C910 · Q908 · D911 · D906 · R904 · Q904 · C904 · D908 · R908 · C616 · R616 · R618 · C617 560P · C621 0.01 · C619 100P · R617 1/2 3.3K · R615 1/2 3.3K · C615 35V100 · R909 68K · C623 100V 0.047 · R621 1W 10 · R619 1/2 100 · L601 · RLY601

IC 604

C618 · C622 · C620 · 1.28 · 1.18 · 43.3 · -43.7 · 0.02 · -0.02 · R620 · L602 · C624 · R622

R802 · R801 82K · S8-2 · S8-1 · R803

S9-1 · S9-3 · S9-4 · S9-2 · S9

HEADPHONES · R623 2W 330 · R624 3

Lch MAIN Rch

Lch REMOTE Rch

SUP17431B

F1 T4A 250V · F2 T2A 250V · F3 T2A 250V

C702 50V4.7 · C701 0.01 · C707 50V100 · D701 · R703 470 · R704 3W 39 · R705 5W 680

D701 SVDSR1K2

T1001 · BLU · ORN · BLK · GRY · WHT · RED · YEL · GRN · BRN

AC31.8 · AC120 · AC110 · AC31.6 · AC10

S11 · C1001 0.01 · S10-1 · S10-2 · C1002 0.01 · AC 50/60Hz 110/120/220/240V

D702 SVDS5VB20F

(−43.7V) Line

C704 50V8200 · C703 50V8200 · Z702 · Z701 · D702

R920 8.2K

D703,704 MA2180B

C705 25V330 · C706 25V330 · D703 · D704 · 18.8

D909 SVDSR1K2 · D909 · R923 2W 470

C803 25V47 · C805 25V33 · L801 · R815 820 · R816 1.5K

DB801

IC 803 AN6875 LED COMPARATOR

IC 802 AN6875 LED COMPARATOR

14.5 · 14.5 · 14.5 · 14.5 · 14.5 · 0 · 14.8 · 0.02 · 15.0

R814 3.9K · R813

170 · 60 · 21 · 7.6 · 2.7 (RIGHT)

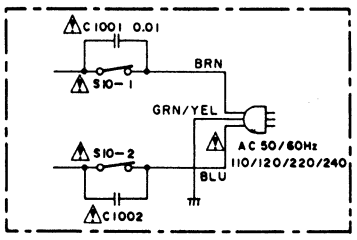
2.7 · 7.6 · 21 · 60 · 170 (LEFT)

PL1 PL2 PL3 PL4 PL5 PL6 PL7 PL8 PL9 PL10 PL11 PL12

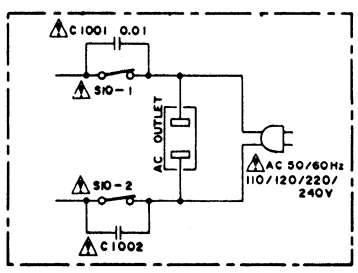
SUP17431C

## POWER SOURCE CIRCUIT OF OTHER PRODUCTS

- **Product for Australia [XAL] only**



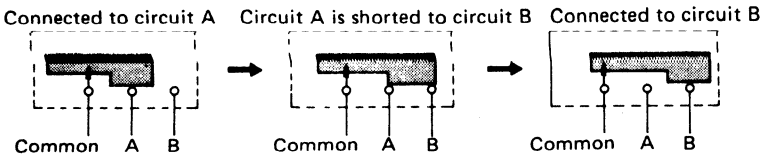

- **Product for Asia, Latin America, Middle East and Africa [XA]**



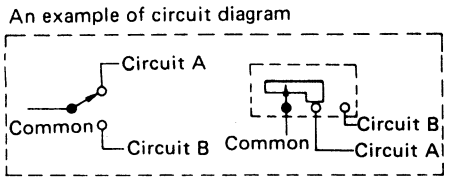

**Notes:**

1. **S1-1～S1-6**: Selector switch in "**FM**" position. ① AM ↔ ② FM ↔ ③ phono ↔ ④ aux
2. **S2-1, S2-2**: Tape monitor switch in "**source**" position. source ↔ tape 1
3. **S3-1, S3-2**: Tape monitor switch in "**source**" position. source ↔ tape 2
4. **S4-1～S4-3**: FM muting/mode switch in "**ON/FM AUTO**" position.
5. **S5-1, S5-2**: Loudness switch in "**OFF**" position.
6. **S6-1～S6-4**: Boost/filter switch (high) in "**OFF**" position. ① high boost ↔ ② off ↔ ③ high filter
7. **S7-1～S7-4**: Boost/filter switch (low) in "**OFF**" position. ① low boost ↔ ② off ↔ ③ low filter
8. **S8**: Power display rang selector switch in "**X1**" position. ① X0.1 ↔ ② X1 ↔ ③ off
9. **S9**: Speaker selector switch in "**MAIN**" position. ① remote ↔ ② main ↔ ③ main + remote
10. **S10**: Power source switch in "**ON**" position.
11. **S11**: Voltage adjuster switch in "**240V**" position. 240V ↔ 220V ↔ 110V ↔ 120V
12. ⚠ indicates that only parts specified by the manufacturer be used for safety.
13. Indicated voltage values are the standard values for the unit measured by the DC electronic circuit tester (high-impedance) with the chassis taken as standard. Therefore, there may exist some errors in the voltage values, depending on the internal impedance of the DC circuit tester.
    ▭ Not apply signal to set and muting switch to OFF condition.
    ( ) AM signal reception.
14. ▬▶ AF signal lines ▭▶ FM signal lines ▬▶ AM signal lines.

Connected to circuit A · Circuit A is shorted to circuit B · Connected to circuit B




An example of circuit diagram



# ■ REPLACEMENT PARTS LIST...Resistors and Capacitors Parts

**NOTES:** 1. Part numbers are indicated on most mechanical parts
Please ust this part number of rparts orders.
2. ⚠ indicates that only parts specified by the manufacturer be used for safety.

| Ref. No. | | Part No. | Part Name & Description |
|---|---|---|---|
| **RESISTORS** | | | |
| R1 | | **ERD25TJ473** | Carbon, 47kΩ, 1/4W, ±5% |
| R2 | | **ERD25FJ221** | Carbon, 220Ω, 1/4W, ±5% |
| R3 | | **ERD25TJ333** | Carbon, 33kΩ, 1/4W, ±5% |
| R4 | | **ERD25FJ391** | Carbon, 390Ω, 1/4W, ±5% |
| R5 | | **ERD25TJ473** | Carbon, 47kΩ, 1/4W, ±5% |
| R6 | | **ERD25TJ183** | Carbon, 18kΩ, 1/4W, ±5% |
| R7 | | **ERD25FJ332** | Carbon, 3.3kΩ, 1/4W, ±5% |
| R8 | | **ERD25FJ102** | Carbon, 1kΩ, 1/4W, ±5% |
| R101 | | **ERD25TJ473** | Carbon, 47kΩ, 1/4W, ±5% |
| R102 | | **ERD25FJ391** | Carbon, 390Ω, 1/4W, ±5% |
| R103 | | **ERD25FJ101** | Carbon, 100Ω, 1/4W, ±5% |
| R105 | | **ERD25FJ821** | Carbon, 820Ω, 1/4W, ±5% |
| R106 | | **ERD25FJ391** | Carbon, 390Ω, 1/4W, ±5% |
| R107 | | **ERD25TJ224** | Carbon, 220kΩ, 1/4W, ±5% |
| R108 | | **ERD25FJ392** | Carbon, 3.9kΩ, 1/4W, ±5% |
| R109 | | **ERD25FJ391** | Carbon, 390Ω, 1/4W, ±5% |
| R110 | | **ERD25FJ103** | Carbon, 10kΩ, 1/4W, ±5% |
| R111 | | **ERD25FJ332** | Carbon, 3.3kΩ, 1/4W, ±5% |
| R112 | | **ERD25TJ473** | Carbon, 47kΩ, 1/4W, ±5% |
| R114 | | **ERD25TJ333** | Carbon, 33kΩ, 1/4W, ±5% |
| R115 | | **ERD25FJ682** | Carbon, 6.8kΩ, 1/4W, ±5% |
| R116 | | **ERD25TJ564** | Carbon, 560kΩ, 1/4W, ±5% |
| R117 | | **ERD25FJ103** | Carbon, 10kΩ, 1/4W, ±5% |
| R118,119 | | **ERD25FJ681** | Carbon, 680Ω, 1/4W, ±5% |
| R120 | | **ERD25TJ563** | Carbon, 56kΩ, 1/4W, ±5% |
| R121 | | **ERD25FJ562** | Carbon, 5.6kΩ, 1/4W, ±5% |
| R122 | | **ERD25FJ102** | Carbon, 1kΩ, 1/4W, ±5% |
| R123 | | **ERD25FJ101** | Carbon, 100Ω, 1/4W, ±5% |
| R127 | | **ERD25FJ103** | Carbon, 10kΩ, 1/4W, ±5% |
| R128 | | **ERD25TJ123** | Carbon, 12kΩ, 1/4W, ±5% |
| R129 | | **ERD25FJ682** | Carbon, 6.8kΩ, 1/4W, ±5% |
| R130 | | **ERD25TJ473** | Carbon, 47kΩ, 1/4W, ±5% |
| R131 | | **ERD25TJ104** | Carbon, 100kΩ, 1/4W, ±5% |
| R132 | | **ERD25FJ472** | Carbon, 4.7kΩ, 1/4W, ±5% |
| R133 | | **ERD25TJ333** | Carbon, 33kΩ, 1/4W, ±5% |
| R134 | | **ERD25TJ153** | Carbon, 15kΩ, 1/4W, ±5% |
| R135 | | **ERD25TJ104** | Carbon, 100kΩ, 1/4W, ±5% |
| R136 | | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ±5% |
| R137 | | **ERD25FJ821** | Carbon, 820Ω, 1/4W, ±5% |
| R138 | ⚠ | ERQ12HJ270 | Fuse Type Metallic, 27Ω, 1/2W, ±5% |
| R139, 140 | | **ERD25FJ561** | Carbon, 560Ω, 1/4W, ±5% |
| R201 | | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ±5% |
| R202 | | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ±5% |
| R203 | | **ERD25TJ183** | Carbon, 18kΩ, 1/4W, ±5% |
| R204 | | **ERD25FJ103** | Carbon, 10kΩ, 1/4W, ±5% |
| R205 | | **ERD25FJ102** | Carbon, 1kΩ, 1/4W, ±5% |
| R206 | | **ERD25FJ103** | Carbon, 10kΩ, 1/4W, ±5% |
| R207 | | **ERD25TJ822** | Carbon, 8.2kΩ, 1/4W, ±5% |
| R208 | | **ERD25TJ124** | Carbon, 120kΩ, 1/4W, ±5% |
| R209 | | **ERD25TJ473** | Carbon, 47kΩ, 1/4W, ±5% |
| R210 | | **ERD25FJ682** | Carbon, 6.8kΩ, 1/4W, ±5% |
| R301 | | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ±5% |
| R302 | | **ERD25FJ102** | Carbon, 1kΩ, 1/4W, ±5% |
| R303 | | **ERD25FJ103** | Carbon, 10kΩ, 1/4W, ±5% |
| R304 | | **ERO25CKF6801** | Metal film, 6.8kΩ, 1/4W, ±1% |
| R305, 306 | | **ERD25FJ681** | Carbon, 680Ω, 1/4W, ±5% |
| R307 | | **ERD25FJ821** | Carbon, 820Ω, 1/4W, ±5% |
| R308 | | **ERD25TJ224** | Carbon, 220kΩ, 1/4W, ±5% |
| R309 | | **ERD25FJ332** | Carbon, 3.3kΩ, 1/4W, ±5% |
| R310 | | **ERD25FJ272** | Carbon, 2.7kΩ, 1/4W, ±5% |
| R401, 402 | | **ERO25CKF1003** | Metal Film 100kΩ, 1/4W, ±1% |
| R403, 404 | | **ERD25FJ221** | Carbon, 220Ω, 1/4W, ±5% |
| R405, 406 | | **ERD25FJ821** | Carbon, 820Ω, 1/4W, ±5% |
| R407, 408 | | **ERD25FJ151** | Carbon, 150Ω, 1/4W, ±5% |
| R409, 410 | | **ERO25CKF1003** | Metal Film, 100kΩ, 1/4W, ±1% |
| R411, 412 | | **ERD25FJ221** | Carbon, 220Ω, 1/4W, ±5% |
| R413, 414 | | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ±5% |
| R415, 416 | | **ERD25TJ563** | Carbon, 56kΩ, 1/4W, ±5% |
| R417 | | **ERD25FJ331** | Carbon, 330Ω, 1/4W, ±5% |
| R418 | | **ERD25FJ680** | Carbon, 68Ω, 1/4W, ±5% |
| R419, 420 | | **ERO25CKF6801** | Metal Film, 6.8kΩ, 1/4W, ±1% |
| R501, 502 | | **ERD25FJ122** | Carbon, 1.2kΩ, 1/4W, ±5% |
| R503, 504 | | **ERD25TJ824** | Carbon, 820kΩ, 1/4W, ±5% |

| Ref. No. | | Part no. | Part Name & Description |
|---|---|---|---|
| R505, 506 | | **ERD25FJ562** | Carbon, 5.6kΩ, 1/4W, ±5% |
| R507, 508 | | **ERD25FJ102** | Carbon, 1kΩ, 1/4W, ±5% |
| R511, 512 | | **ERD25TJ564** | Carbon, 560kΩ, 1/4W, ±5% |
| R513, 514 | | **ERD25TJ273** | Carbon, 27kΩ, 1/4W, ±5% |
| R515, 516 | | **ERD25FJ472** | Carbon, 4.7kΩ, 1/4W, ±5% |
| R517, 518 | | **ERD25TJ393** | Carbon, 39kΩ, 1/4W, ±5% |
| R519, 520 | | **ERD25TJ393** | Carobn, 39kΩ, 1/4W, ±5% |
| R521, 522 | | **ERD25FJ182** | Carbon, 1.8kΩ, 1/4W, ±5% |
| R523, 524 | | **ERD25FJ391** | Carbon, 390Ω, 1/4W, ±5% |
| R525, 526 | | **ERD25TJ124** | Carbon, 120kΩ, 1/4W, ±5% |
| R527, 528 | | **ERD25TJ124** | Carbon, 120kΩ, 1/4W, ±5% |
| R529, 530 | | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ±5% |
| R531, 532 | | **ERD25TJ333** | Carbon, 33kΩ, 1/4W, ±5% |
| R533, 534 | | **ERD25TJ823** | Carbon, 82kΩ, 1/4W, ±5% |
| R541, 542 | | **ERD25TJ124** | Carbon, 120kΩ, 1/4W, ±5% |
| R543, 544 | | **ERO25CKF3903** | Metal Film, 390kΩ, 1/4W, ±1% |
| R545, 546 | | **ERO25CKF1003** | Metal Film, 100kΩ, 1/4W, ±1% |
| R547, 548 | | **ERD25FJ472** | Carbon, 4.7kΩ, 1/4W, ±5% |
| R549, 550 | | **ERD25FJ472** | Carbon, 4.7kΩ, 1/4W, ±5% |
| R601, 602 | | **ERD25TJ563** | Carbon, 56kΩ, 1/4W, ±5% |
| R603, 604 | | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ±5% |
| R605, 606 | | **ERD25TJ473** | Carbon, 47kΩ, 1/4W, ±5% |
| R607, 608 | | **ERD25TJ473** | Carbon, 47kΩ, 1/4W, ±5% |
| R609, 610 | | **ERD25FJ122** | Carbon, 1.2kΩ, 1/4W, ±5% |
| R611, 612 | ⚠ | **ERD25FJ681** | Carbon, 680Ω, 1/4W, ±5% |
| R613, 614 | ⚠ | **ERD25FJ390** | Carbon, 39Ω, 1/4W, ±5% |
| R615, 616 | ⚠ | **ERD50FJ392** | Carbon, 3.9kΩ, 1/2W, ±5% |
| R617, 618 | ⚠ | **ERD50FJ332** | Carbon, 3.3kΩ, 1/2W, ±5% |
| R619, 620 | ⚠ | **ERD50FJ101** | Carbon, 100Ω, 1/2W, ±5% |
| R621, 622 | | **ERG1ANJ100** | Carbon, 10Ω, 1W, ±5% |
| R623, 624 | | ERG2ANJ331 | Metal Oxide, 330Ω, 2W, ±5% |
| R625 | ⚠ | **ERD25FJ470** | Carbon, 47Ω, 1/4W, ±5% |
| R626 | ⚠ | **ERD50FJ682** | Carbon, 6.8kΩ, 1/2W, ±5% |
| R627 | ⚠ | **ERD25FJ220** | Carbon, 22Ω, 1/4W, ±5% |
| R631 | | **ERD25FJ122** | Carbon, 1.2kΩ, 1/4W, ±5% |
| R635, 636 | | **ERD25TJ104** | Carbon, 100kΩ, 1/4W, ±5% |
| R703 | ⚠ | **ERF5SJ471** | Non-Flammable, 470Ω, 5W, ±5% |
| R704 | ⚠ | ERQ3CJ390 | Fuse Type Metallic, 39Ω, 3W, ±5% |
| R705 | ⚠ | ERF5SJ561 | Non-Flammable, 560Ω, 5W, ±5% |
| R706 | | **ERD25FJ272** | Carbon, 2.7kΩ, 1/4W, ±5% |
| R801, 802 | | **ERD25TJ823** | Carbon, 82kΩ, 1/4W, ±5% |
| R803, 804 | | **ERD25TJ393** | Carbon, 39kΩ, 1/4W, ±5% |
| R805, 806 | | **ERD25TJ824** | Carbon, 820kΩ, 1/4W, ±5% |
| R807, 808 | | **ERD25TJ223** | Carbon, 22kΩ, 1/4W, ±5% |
| R813, 814 | | **ERD25FJ392** | Carbon, 3.9kΩ, 1/4W, ±5% |
| R815 | | **ERD25FJ821** | Carbon, 820Ω, 1/4W, ±5% |
| R816 | | **ERD25FJ152** | Carbon, 1.5kΩ, 1/4W, ±5% |
| R901, 902 | ⚠ | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ±5% |
| R903, 904 | | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ±5% |
| R905 | ⚠ | **ERD25FJ471** | Carbon, 470Ω, 1/4W, ±5% |
| R906 | ⚠ | **ERD25FJ331** | Carbon, 330Ω, 1/4W, ±5% |
| R907, 908 | ⚠ | **ERD25FJ471** | Carbon, 470Ω, 1/4W, ±5% |
| R909, 910 | | **ERD25TJ683** | Carbon, 68kΩ, 1/4W, ±5% |
| R911 | | **ERD25FJ472** | Carbon, 4.7kΩ, 1/4W, ±5% |
| R912 | | **ERD25FJ392** | Carbon, 3.9kΩ, 1/4W, ±5% |
| R913 | | **ERD25TJ393** | Carbon, 39kΩ, 1/4W, ±5% |
| R917 | | **ERD25TJ473** | Carbon, 47kΩ, 1/4W, ±5% |
| R918 | | **ERD25TJ154** | Carbon, 150kΩ, 1/4W, ±5% |
| R919 | | **ERD25TJ223** | Carbon, 22kΩ, 1/4W, ±5% |
| R920 | | **ERD25TJ822** | Carbon, 8.2kΩ, 1/4W, ±5% |
| R923 | | **ERG2ANJ471** | Metal Oxide, 470Ω, 2W, ±5% |
| R924 | | **ERD25TJ153** | Carbon, 15kΩ, 1/4W, ±5% |
| R927 | ⚠ | **ERD25FJ331** | Carbon, 330Ω, 1/4W, ±5% |
| R928 | ⚠ | **ERD25FJ471** | Carbon, 470Ω, 1/4W, ±5% |
| R929, 930 | ⚠ | **ERD25FJ222** | Carbon, 2.2kΩ, 1/4W, ±5% |
| **CAPACITORS** | | | |
| C1 | | ECCD1H120KC | Ceramic, 12pF, 50V, ±10% |
| C2 | | ECCD1H030CC | Ceramic, 3pF, 50V, ±0.25pF |
| C3 | | ECCD1H180KC | Ceramic, 18pF, 50V, ±10% |
| C4 | | ECCD1H050CC | Ceramic, 5pF, 50V, ±0.25pF |
| C5 | | ECKD1H223ZF | Ceramic, 0.022μF, 50V, +80% −20% |
| C6 | | ECKD1H102ZF | Ceramic, 0.001μF, 50V, +80% −20% |

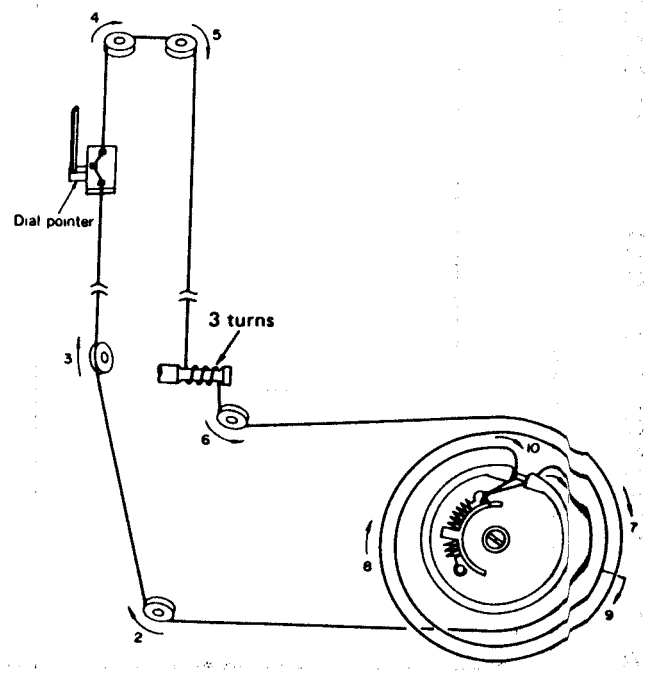
| Ref. No. | | Part No. | Part Name & Description |
|---|---|---|---|
| C7 | | ECCD1H390KC | Ceramic, 39pF, 50V, ±10% |
| C8 | | ECCD1H100KC | Ceramic, 10pF, 50V, ±10% |
| C9, 10 | | ECKD1H102MDA | Ceramic, 0.001μF, 50V, ±20% |
| C11, 12 [XAL] only | | ECKDHS101MB | Ceramic, 100pF, 400VAC, ±20% |
| C101 | | **ECEA50Z1** | Electrolytic, 1μF, 50V |
| C102 | | ECKD1H223ZF | Ceramic, 0.022μF, 50V, +80% −20% |
| C103, 104 | | **ECEA1HS100** | Electrolytic, 10μF 50V |
| C105 | | ECKD1H561KB | Ceramic, 560pF, 50V, ±10% |
| C106 | | ECKD1H102ZF | Ceramic, 0.001μF, 50V, +80% −20% |
| C107 | | ECKD1H223ZF | Ceramic, 0.022μF, 50V, +80% −20% |
| C108 | | **ECEA1CS330** | Electrolytic 33μF, 16V |
| C109 | | ECKD1H223ZF | Ceramic, 0.022μF, 50V, +80% −20% |
| C110 | | ECKD1H102ZF | Ceramic, 0.001μF, 50V, +80% −20% |
| C111 | | ECKD1H103ZF | Ceramic, 0.01μF, 50V, +80% −20% |
| C112 | | **ECEA1ES220** | Electrolytic, 22μF, 25V |
| C113 | | **ECEA1HS100** | Electrolytic, 10μF, 50V |
| C114 | | **ECEA50Z3R3** | Electrolytic, 3.3μF, 50V |
| C115 | | **ECEA1HS100** | Electrolytic, 10μF, 50V |
| C201 | | ECKD1H103MD | Ceramic, 0.01μF, 50V, ±20% |
| C202 | | ECKD1H223ZF | Ceramic, 0.022μF, 50V, +80% −20% |
| C203 | | ECKD1H103ZF | Ceramic, 0.01μF, 50V, +80% −20% |
| C204 | | ECKD1H223ZF | Ceramic, 0.022μF, 50V, +80% −20% |
| C205 [XE] only | | ECCD1H151K | Ceramic, 150pF, 50V, ±10% |
| C206 | | ECCD1H680K | Ceramic, 68pF, 50V, ±10% |
| C207 | | **ECEA50ZR1** | Electrolytic, 0.1μF, 50V |
| C208 | | **ECEA50Z3R3** | Electrolytic, 3.3μF, 50V |
| C209 | | ECKD1H223ZF | Ceramic, 0.022μF, 50V +80% −20% |
| C210[Other Arers] | | ECQM1H122JZ | Polyester, 0.0012μF, 50V, ± 5% |
| C210 [XE] only | | ECQM1H102JZ | Polyester, 0.001μF, 50V, ± 5% |
| C211 [XAL] only | | ECKDHS102MD | Ceramic, 0.001μF, 400VAC, ±20% |
| C301 | | ECKD1H223ZF | Ceramic, 0.022μF, 50V, +80% −20% |
| C302 | | **ECEA50ZI** | Electrolytic, 1μF, 50V |
| C303 | | **ECEA50ZR1** | Electrolytic, 0.1μF, 50V |
| C304 | | **ECEA50Z1** | Electrolytic, 1μF, 50V |
| C305 | | ECQP1102JZ | Polypropylene, 0.001μF, 125V, ± 5% |
| C306 | | ECQM1H182JZ | Polyester, 0.0018μF, 50V, ± 5% |
| C307, 308 | | ECKD1H331KB | Ceramic, 330pF, 50V, ±10% |
| C309, 310 | | ECQM1H272KZ | Polyester, 0.0027μF, 50V, ±10% |
| C311, 312 | | ECQM1H183JZ | Polyester, 0.018μF, 50V, ± 5% |
| C313, 314 | | **ECEA50ZR22** | Electrolytic, 0.22μF, 50V |
| C315 | | **ECEA1HS100** | Electrolytic, 10μF, 50V |
| C316 | | **ECEA50ZR1** | Electrolytic, 0.1μF, 50V |
| C317 | | **ECEA1ES470** | Electrolytic, 47μF, 25V |
| C401, 402 | | **ECEA50M3R3R** | Electrolytic, 3.3μF, 50V |
| C403, 404 | | ECKD1H471KB | Ceramic, 470pF, 50V, ±10% |
| C405, 406 | | **ECEA1AS101** | Electrolytic, 100μF, 10V, |
| C407, 408 | | ECKD1H222MD | Ceramic, 0.0022μF, 50V, ±20% |
| C409, 410 | | ECQP1393GZ | Polypropylene, 0.039μF, 125V, ± 2% |
| C411, 412 | | ECQP1103GZ | Polypropylene, 0.01μF, 125V, ± 2% |
| C413, 414 | △ | **ECEA50NR47** | Non-polar Electrolytic, 0.47μF, 50V |
| C415, 416 | | **ECEA1ES221** | Electrolytic, 220μF, 25V |

| Ref. No. | | Part No. | Part Name & Description |
|---|---|---|---|
| C417, 418 | | ECQM1H102KZ | Polyester, 0.001μF, 50V, ±10% |
| C419 | | ECKD1H223ZF | Ceramic, 0.022μF, 50V +80% −20% |
| C420 | | **ECEA50ZR22** | Electrolytic, 0.22μF, 50V |
| C421, 422 | | ECKD1H821KB | Ceramic, 820pF, 50V, ±10% |
| C501, 502 | | ECQM1H473KZ | Polyester, 0.047μF, 50V, ±10% |
| C503, 504 | | ECQM1H682KZ | Polyester, 0.0068μF, 50V, ±10% |
| C505, 506 | | ECQM1H272KZ | Polyester, 0.0027μF, 50V, ±10% |
| C507, 508 | | ECQM1H223KZ | Polyester, 0.022μF, 50V, ±10% |
| C509, 510 | | **ECEA1CS330** | Electrolytic, 33μF, 16V |
| C511, 512 | | ECQM1H123KZ | Polyester, 0.012μF, 50V, ±10% |
| C513 | | ECQM1H683KZ | Polyester, 0.068μF, 50V, ±10% |
| C514 | | ECQM1H683KZ | Polyester, 0.068μF, 50V, ±10% |
| C515, 516 | | ECQM1H123KZ | Polyester, 0.012μF, 50V, ±10% |
| C517, 518 | | ECKD1H331KB | Ceramic, 330pF, 50V, ±10% |
| C519, 520 | | ECQM1H473KZ | Polyester, 0.047μF, 50V, ±10% |
| C523, 524 | | ECCD1H120K | Ceramic, 12pF, 50V, ±10% |
| C601, 602 | | **ECEA50M1** | Electrolytic, 1μF, 50V |
| C603, 604 | | ECCD2H030C | Ceramic, 3pF, 500V, ±0.25pF |
| C605, 606 | | **ECEA1HS470** | Electrolytic, 47μF, 50V |
| C607, 608 | | ECKD1H561KB | Ceramic, 560pF, 50V, ±10% |
| C609, 610 | | ECCD1H101K | Ceramic, 100pF, 50V, ±10% |
| C611, 612 | | ECKD1H681KB | Ceramic, 680pF 50V, ±10% |
| C613, 614 | | ECCD2H390K | Ceramic, 39pF, 500V, ±10% |
| C615, 616 | | **ECEA1VS101** | Electrolytic, 100μF, 35V |
| C617, 618 | | ECKD2H561KB | Ceramic, 560pF, 500V, ±10% |
| C619, 620 | | ECCD2H101K | Ceramic, 100pF, 500V, ±10% |
| C621, 622 | | ECKD1H103ZF | Ceramic, 0.01μF, 50V, +80% −20% |
| C623, 624 | | ECQM1H473KZ | Polyester, 0.047μF, 50V, ±10% |
| C625, 626 | | ECCD1H101K | Ceramic, 100pF, 50V, ±10% |
| C627 | | **ECEA1AS101** | Electrolytic, 100μF, 10V |
| C628 | | **ECEA1HS101** | Electrolytic, 100μF, 50V |
| C629 | | **ECEA1JS470** | Electrolytic, 47μF, 63V |
| C631, 632 | | ECCD1H121K | Ceramic, 120pF, 50V, ±10% |
| C633 | | **ECEA1AS101** | Electrolytic, 100μF, 10V |
| C701 | | ECKD1H103ZF | Ceramic, 0.01μF, 50V +80% −20% |
| C702 | | **ECEA50Z4R7** | Electrolytic, 4.7μF, 50V |
| C703, 704 | | ECETS1HV822U | Electrolytic, 8200μF, 50V |
| C705, 706 | | **ECEA1ES331** | Electrolytic, 330μF, 25V |
| C707 | | **ECEA1HS101** | Electrolytic, 100μF, 50V |
| C708 | | ECKD1H103ZF | Ceramic, 0.01μF, 50V, +80% −20% |
| C801, 802 | | ECQM1H473KZ | Polyester, 0.047μF, 50V ±10% |
| C803 | | **ECEA1ES470** | Electrolytic, 47μF, 25V |
| C805 | | **ECEA1VS330** | Electrolytic, 33μF, 35V |
| C807, 808 | | ECCD1H181K | Ceramic, 180pF, 50V, ±10% |
| C901, 902 | | ECKD1H103ZF | Ceramic, 0.01μF, 50V, +80% −20% |
| C903, 904 | | ECKD1H103ZF | Ceramic, 0.01μF, 50V, +80% −20% |
| C905 | △ | ECEA1CN221S | Non-polar Electrolytic, 220μF, 16V |
| C907 | | **ECEA1JS330** | Electrolytic, 33μF, 63V |
| C909, 910 | △ | ECEA2AN3R3 | Non-polar Electrolytic, 3.3μF, 100V |
| C1001, 1002 | △ | ECKDKC103PF | Ceramic, 0.01μF, 400VAC, +100% 0% |

## ■ DIAL CORD INSTALLATION GUIDE

* For threading a fresh cord, proceed as follows.

1. Prepare a fresh cord more than 180cm (70-15/16") in length.
2. Bring the variable capacitor into a state where the drum is completely turned to the right (maximum capacity and lowest frequency for the variable capacitor.)
3. Direct the cord in the order from 1 to 10.
4. Stretch the cord in such a tension as the spring length is elongated by 1.5 times that of the original state.
5. Fix the knot of the cord with the adhesive.






Printed in Japan
8001E200 Ⓐ Y.K.